

Math 0310
Final Exam Review

#	Problem	Section	Answer
1.	Factor completely: $2x^2 - 6xy + 2x$	3.3	$2x(x - 3y + 1)$
2.	Factor completely: $2x(y + 5) + 3(y + 5)$	3.3	$(2x + 3)(y + 5)$
3.	Factor completely: $3ax - bx - 6ay + 2by$	3.3	$(3a - b)(x - 2y)$
4.	Factor completely: $x^2 - 36$	3.4	$(x + 6)(x - 6)$
5.	Factor completely: $64a^3 + 8$	3.4	$8(2a + 1)(4a^2 - 2a + 1)$
6.	Factor completely: $250x^3 - 2y^3$	3.4	$2(5x - y)(25x^2 + 5xy + y^2)$
7.	Factor completely: $20x^3 - 32x^2y + 12xy^2$	3.5	$4x(5x - 3y)(x - y)$
8.	Factor completely: $x^2 - 14x + 49$	3.5	$(x - 7)^2$
9.	Factor completely: $4(2x - 3y)^2 - 8(2x - 3y) - 21$	3.5	$(4x - 6y + 3)(4x - 6y - 7)$

10.	Factor completely: $x^2 - 8xy + 16y^2 - 25z^2$	3.5	$(x - 4y - 5z)(x - 4y + 5z)$
11.	Write the following quadratic equation in standard form. Identify the quadratic term, the linear term, and the constant term. $(2x - 5)^2 = 2x - 5$	3.7	$4x^2 - 22x + 30 = 0$ Quadratic term: $4x^2$ Linear term: $-22x$ Constant term: 30
12.	Solve: $6x^2 + 9x = 0$	3.7	$\left\{-\frac{3}{2}, 0\right\}$
13.	Solve: $121 - x^2 = 0$	3.7	$\{-11, 11\}$
14.	Solve: $x^2 + 12x + 36 = 0$	3.7	$\{-6\}$
15.	Solve: $6x^2 + 17x = -7$	3.7	$\left\{-\frac{7}{3}, -\frac{1}{2}\right\}$
16.	Solve: $(5x + 2)(x - 4) = (2x + 1)(x - 14)$	3.7	$\{-2, -1\}$
17.	Find two consecutive even integers, the sum of whose squares is 340.	3.8	12 and 14; -14 and -12
18.	The length of a rectangle is twice the width. If the width is increased by 4 m and the length is increased by 2 m, then this larger rectangle would have an area of 140 sq m. What are the dimensions of the original rectangle?	3.8	6m \times 12m
19.	One leg of a right triangle is 7 in. shorter than the other leg. The hypotenuse is 13 in. long. What are the lengths of the legs of the triangle?	3.8	5 in. and 12 in.

20.	Little Adam is sitting in his high chair with a bowl of oatmeal in front of him, 4 ft above the floor. Instead of eating it, he drops it on the floor. The equation that gives the bowl's height above the floor is $h = -16t^2 + 4$. When does the bowl hit the ground?	3.8	After $\frac{1}{2}$ sec
21.	A photograph and its frame cover 45 sq in. The frame is 1 in. wide. The length of the photograph is 1 in. longer than twice the width. What are the dimensions of the photograph?	3.8	3 in. \times 7 in.
22.	Evaluate: $5^6 \cdot 5^{-2}$	4.1	625
23.	Evaluate: $\frac{7^3}{7^5}$	4.1	$\frac{1}{49}$
24.	Evaluate: $(8^0)^{-3}$	4.1	1
25.	Evaluate: $(3^2)^{-2}$	4.1	$\frac{1}{81}$
26.	Evaluate: -9^2	4.1	-81
27.	Evaluate: $(-6)^{-2}$	4.1	$\frac{1}{36}$
28.	Evaluate: $(6^{-1} - 3^{-2})^{-1}$	4.1	18
29.	Evaluate: $\left(\frac{-4}{5}\right)^{-4}$	4.1	$\frac{625}{256}$

30.	Evaluate: $\frac{7^{-5}}{7^{-3}}$	4.1	$\frac{1}{49}$
31.	Simplify. Write with only positive exponents. $(4x^{-3}y)^3(8x^{-1}y^{-3})^{-2}$	4.1	$\frac{y^9}{x^7}$
32.	Simplify. Write with only positive exponents. $\left(\frac{-5a}{2b^2}\right)^3$	4.1	$\frac{-125a^3}{8b^6}$
33.	Simplify. Write with only positive exponents. $\left(\frac{-5x^{-3}}{8y}\right)^2\left(\frac{x^5}{6y^{-3}}\right)^{-2}$	4.1	$\frac{225}{16x^{16}y^8}$
34.	Simplify. Write with only positive exponents. $\left(\frac{6^0x^5y^{-7}}{2x^2y^2}\right)^{-2}$	4.1	$\frac{4y^{18}}{x^6}$
35.	Simplify. Write with only positive exponents. $\left[\left(\frac{3x^4}{5y^2}\right)^{-2}\right]^{-1}$	4.1	$\frac{9x^8}{25y^4}$
36.	Reduce to lowest terms. $\frac{7a^3b^2}{14a^4b^5}$	4.2	$\frac{1}{2ab^3}$
37.	Reduce to lowest terms. $\frac{x^2 - 8x + 15}{5x - x^2}$	4.2	$-\frac{x-3}{x}$

38.	Reduce to lowest terms. $\frac{2y^2 - 8x^2}{12x^2 + 30xy - 18y^2}$	4.2	$-\frac{y + 2x}{3(x + 3y)}$
39.	Reduce to lowest terms. $\frac{8a^3 + b^3}{8a^2 + 6ab + b^2}$	4.2	$\frac{4a^2 - 2ab + b^2}{4a + b}$
40.	Reduce to lowest terms. $\frac{3a^3 + a^2b - 3ab^2 - b^3}{3b^2 - 2ba - a^2}$	4.2	$-\frac{(3a + b)(a + b)}{3b + a}$
41.	Perform the indicated operation and reduce to lowest terms. $\frac{6x^5y^2}{7a^3b^4} \cdot \frac{14ay^5}{9a^2z} \div \frac{3x^3y^7}{4a^2b^4}$	4.3	$\frac{16x^2}{9a^2z}$
42.	Perform the indicated operation and reduce to lowest terms. $\frac{4x^2 - 16x}{x^2 - 16} \cdot \frac{x^2 + 2x - 8}{3x^3 + 6x^2}$	4.3	$\frac{4(x - 2)}{3x(x + 2)}$
43.	Perform the indicated operation and reduce to lowest terms. $\frac{a^3 - 8b^3}{6b^2 - ba - a^2} \div \frac{3a^3b + 6a^2b^2 + 12ab^3}{a^2 - 9b^2}$	4.3	$-\frac{a - 3b}{3ab}$
44.	Perform the indicated operation and simplify if possible. $\frac{3y + 2}{2y^2 - y - 1} - \frac{2y + 3}{2y^2 - y - 1}$	4.4	$\frac{1}{2y + 1}$

45.	Perform the indicated operation and simplify if possible. $\frac{7}{2x-y} + \frac{3-y}{y-2x}$	4.4	$\frac{y+4}{2x-y}$
46.	Perform the indicated operation and simplify if possible. $\frac{2}{x^2+3x} + \frac{8}{5x+15}$	4.4	$\frac{2(4x+5)}{5x(x+3)}$
47.	Perform the indicated operation and simplify if possible. $\frac{11x-11}{x^2-x-12} - \frac{8x-4}{x^2-5x-24}$	4.4	$\frac{3x^2-63x+72}{(x-4)(x+3)(x-8)}$
48.	Simplify the following fraction: $\frac{\frac{3x+6}{5-x}}{\frac{9x}{x-5}}$	4.5	$-\frac{x+2}{3x}$
49.	Simplify the following fraction: $\frac{\frac{2x^2-7x-4}{4x^2-1}}{\frac{x^2-7x+12}{x^3-27}}$	4.5	$\frac{x^2+3x+9}{2x-1}$
50.	Simplify the following fraction: $\frac{\frac{2}{x} - \frac{2}{2x+1}}{\frac{3}{x^2} + \frac{3}{2x+1}}$	4.5	$\frac{2x}{3(x+1)}$

51.	Simplify the following fraction: $\frac{\frac{8}{2-x} + x}{2 + \frac{2x^2}{x-2}}$	4.5	$\frac{x-4}{2(x-1)}$
52.	Simplify the following fraction: $\frac{x^{-4} - y^{-4}}{x^{-2} + y^{-2}}$	4.5	$\frac{(y-x)(y+x)}{x^2y^2}$
53.	Perform the indicated division: $\frac{8a^3b - 6a^2b^2 + 12ab^4}{10a^2b^2}$	4.6	$\frac{4a}{5b} - \frac{3}{5} + \frac{6b^2}{5a}$
54.	Perform the indicated division: $\frac{5x^3 - 8x^2 + 2x + 4}{x-2}$	4.6	$5x^2 + 2x + 6 + \frac{16}{x-2}$
55.	Perform the indicated division: $\frac{18x^3 - 14x + 6}{3x-2}$	4.6	$6x^2 + 4x - 2 + \frac{2}{3x-2}$
56.	Solve for x. $\frac{x}{x-2} - \frac{3}{3x+2} = \frac{8}{3x^2 - 4x - 4}$	4.8	{1}
57.	Find the solution to the following problem. The sum of the reciprocals of two consecutive even integers is $\frac{13}{84}$. What are the integers?	4.9	12 and 14

58.	Find the solution to the following problem. Kristin can shell a quart of pecans twice as fast as her brother Brian. Working together they can shell a quart of pecans in 20 min. How long would it take Brian to shell a quart of pecans by himself?	4.9	60 min
59.	Find the solution to the following problem. Hermes can travel 2 mi up Mt. Olympus at a rate that is 18 mi/hr slower than he rides Pegasus down the same distance. The entire trip takes him 14 min. How fast can he go up? How fast can he ride down? (<i>Hint:</i> Change 14 min to hours.)	4.9	Up 12 mph, down 30 mph
60.	Evaluate (if possible): $169^{\frac{1}{2}}$	5.1	13
61.	Evaluate (if possible): $\left(\frac{9}{25}\right)^{\frac{1}{2}}$	5.1	$\frac{3}{5}$
62.	Evaluate (if possible): $-16^{\frac{1}{2}}$	5.1	-4
63.	Evaluate (if possible): $(-16)^{\frac{1}{2}}$	5.1	Not a real number
64.	Evaluate (if possible): $(-1)^{\frac{1}{3}}$	5.1	-1

65.	Evaluate (if possible): $\left(-\frac{27}{64}\right)^{\frac{1}{3}}$	5.1	$-\frac{3}{4}$
66.	Evaluate (if possible): $-32^{\frac{1}{5}}$	5.1	-2
67.	Evaluate (if possible): $27^{\frac{4}{3}}$	5.1	81
68.	Evaluate (if possible): $(-4)^{\frac{3}{2}}$	5.1	Not a real number
69.	Evaluate (if possible): $\left(\frac{49}{25}\right)^{-\frac{3}{2}}$	5.1	$\frac{125}{343}$
70.	Evaluate (if possible): $\left(-\frac{1}{32}\right)^{-\frac{3}{5}}$	5.1	-8
71.	Simplify. (Write the answer with only positive exponents.) Assume that all of the variables represent positive real numbers. $8^{\frac{7}{12}} \cdot 8^{-\frac{1}{4}}$	5.1	2

72.	<p>Simplify. (Write the answer with only positive exponents.) Assume that all of the variables represent positive real numbers.</p> $\frac{64^{-1} \cdot 64^{\frac{7}{15}}}{64^{-\frac{1}{5}}}$	5.1	$\frac{1}{4}$
73.	<p>Simplify. (Write the answer with only positive exponents.) Assume that all of the variables represent positive real numbers.</p> $\left(\frac{1}{8^{12}} \cdot 25^{-\frac{1}{8}} \right)^4$	5.1	$\frac{2}{5}$
74.	<p>Simplify. (Write the answer with only positive exponents.) Assume that all of the variables represent positive real numbers.</p> $\frac{x^{\frac{3}{8}}}{x^{\frac{2}{3}}}$	5.1	$\frac{1}{x^{\frac{7}{24}}}$
75.	<p>Simplify. (Write the answer with only positive exponents.) Assume that all of the variables represent positive real numbers.</p> $\frac{-8x^2 y^{\frac{1}{4}}}{2x^{\frac{1}{3}} y^{\frac{3}{5}}}$	5.1	$-4x^{\frac{7}{3}} y^{\frac{7}{20}}$
76.	<p>Simplify. (Write the answer with only positive exponents.) Assume that all of the variables represent positive real numbers.</p> $\left(\frac{8x^{-2}}{125y^{\frac{1}{5}}} \right)^{\frac{5}{3}}$	5.1	$\frac{3125x^{\frac{10}{3}} y^{\frac{1}{3}}}{32}$

77.	Simplify. (Write the answer with only positive exponents.) Assume that all of the variables represent positive real numbers. $\left(\frac{8x^2}{y^{-3}}\right)^{\frac{1}{3}}\left(\frac{9x^4}{y^{-1}}\right)^{-\frac{3}{2}}$	5.1	$\frac{2}{27x^{\frac{16}{3}}y^2}$
78.	Simplify. (Write the answer with only positive exponents.) Assume that all of the variables represent positive real numbers. $(27x^6)^{-\frac{2}{3}}$	5.1	$\frac{1}{9x^4}$
79.	Evaluate, if possible. $\sqrt{7^2}$	5.2	7
80.	Evaluate, if possible. $\sqrt[4]{-1}$	5.2	Not a real number
81.	Evaluate, if possible. $\sqrt[5]{-32}$	5.2	-2
82.	Evaluate, if possible. $\sqrt[5]{3^5}$	5.2	3
83.	Evaluate, if possible. $\sqrt[3]{\frac{8}{27}}$	5.2	$\frac{2}{3}$

84.	Evaluate, if possible. $\sqrt{9} \cdot \sqrt{16}$	5.2	12
85.	Evaluate, if possible. $\frac{\sqrt[3]{27}}{\sqrt{36}}$	5.2	$\frac{1}{2}$
86.	Convert the following to radicals. $a^{\frac{2}{3}}$	5.2	$\sqrt[3]{a^2}$
87.	Convert the following to radicals. $(-5ab^2)^{\frac{4}{3}}$	5.2	$\sqrt[3]{625a^4b^8}$ or $5ab^2\sqrt[3]{5ab^2}$
88.	Convert the following to radicals. $(x^2 + y^2)^{\frac{1}{2}}$	5.2	$\sqrt{x^2 + y^2}$
89.	Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers. $\sqrt{11}$	5.2	$11^{\frac{1}{2}}$
90.	Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers. $\sqrt[3]{x}$	5.2	$x^{\frac{1}{3}}$
91.	Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers. $\sqrt[4]{a^3}$	5.2	$a^{\frac{3}{4}}$

92.	<p>Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers.</p> $\sqrt[3]{x^6}$	5.2	x^2
93.	<p>Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers.</p> $\left(\sqrt[4]{y}\right)^5$	5.2	$y^{\frac{5}{4}}$
94.	<p>Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers.</p> $\sqrt{\left(3x^2y\right)^3}$	5.2	$\left(3x^2y\right)^{\frac{3}{2}}$
95.	<p>Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers.</p> $\sqrt[4]{(a+b)^4}$	5.2	$a+b$
96.	<p>Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers.</p> $\sqrt[3]{y} \cdot \sqrt[4]{y^3}$	5.2	$y^{\frac{13}{12}}$
97.	<p>Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers.</p> $\sqrt{3x} \cdot \sqrt{3x^5}$	5.2	$3x^3$

98.	Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers. $\sqrt[3]{x}$ $\sqrt[6]{x}$	5.2	$\frac{1}{x^6}$
99.	Convert the following radicals to expressions with rational exponents and simplify where possible. Assume that all variables represent positive numbers. $\sqrt[4]{\sqrt[3]{x^2}}$	5.2	$\frac{1}{x^6}$
100.	Simplify. Assume that the variables represent positive real numbers. $\sqrt{36x^6y^8}$	5.2	$6x^3y^4$
101.	Simplify. Assume that the variables represent positive real numbers. $\sqrt[3]{27x^3y^6}$	5.2	$3xy^2$
102.	Simplify. Assume that the variables represent positive real numbers. $\sqrt[4]{16x^8y^4}$	5.2	$2x^2y$
103.	Simplify. Assume that the variables represent positive real numbers. $\sqrt{y^2 + 8y + 16}$	5.2	$y + 4$
104.	Simplify. $\sqrt{15} \cdot \sqrt{20}$	5.3	$10\sqrt{3}$
105.	Simplify. $\sqrt{7} \cdot \sqrt{7}$	5.3	7

106.	Simplify. $\sqrt[3]{6} \cdot \sqrt[3]{18}$	5.3	$3\sqrt[3]{4}$
107.	Simplify. $\sqrt{216}$	5.3	$6\sqrt{6}$
108.	Simplify. $\sqrt[3]{-250}$	5.3	$-5\sqrt[3]{2}$
109.	Simplify. $\sqrt[4]{48}$	5.3	$2\sqrt[4]{3}$
110.	Simplify. Assume that all variables represent positive numbers. $\sqrt[4]{4x^6}$	5.3	$x\sqrt{2x}$
111.	Simplify. Assume that all variables represent positive numbers. $\sqrt[4]{2x^4y^9}$	5.3	$xy^2\sqrt[4]{2y}$
112.	Simplify. Assume that all variables represent positive numbers. $\sqrt[3]{81x^2y^3z^8}$	5.3	$3yz^2\sqrt[3]{3x^2z^2}$
113.	Simplify. Assume that all variables represent positive numbers. $\frac{5}{\sqrt{3y}}$	5.3	$\frac{5\sqrt{3y}}{3y}$
114.	Simplify. Assume that all variables represent positive numbers. $\sqrt{\frac{6x^5}{y^3}}$	5.3	$\frac{x^2\sqrt{6xy}}{y^2}$

115.	Simplify. Assume that all variables represent positive numbers. $\sqrt{\frac{5x^2}{28y^3}}$	5.3	$\frac{x\sqrt{35y}}{14y^2}$
116.	Simplify. Assume that all variables represent positive numbers. $\frac{3x}{\sqrt[3]{y^2}}$	5.3	$\frac{3x\sqrt[3]{y}}{y}$
117.	Simplify. Assume that all variables represent positive numbers. $\sqrt[3]{\frac{8}{3x}}$	5.3	$\frac{2\sqrt[3]{9x^2}}{3x}$
118.	Simplify. Assume that all variables represent positive numbers. $\sqrt[6]{x^4y^9}$	5.3	$y\sqrt[3]{x^2}\sqrt{y}$
119.	Perform the indicated operation. $15\sqrt[3]{6} + \sqrt[3]{6} - 20\sqrt[3]{6}$	5.4	$-4\sqrt[3]{6}$
120.	Perform the indicated operations. Assume that all variables represent positive numbers. $9x^2\sqrt{2y} + x^2\sqrt{2y}$	5.4	$10x^2\sqrt{2y}$
121.	Perform the indicated operations. $\sqrt{18} - \sqrt{98} + 5\sqrt{8}$	5.4	$6\sqrt{2}$
122.	Perform the indicated operations. $\sqrt[3]{40} + 3\sqrt[3]{72}$	5.4	$2\sqrt[3]{5} + 6\sqrt[3]{9}$

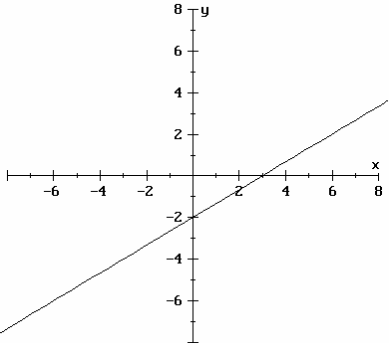
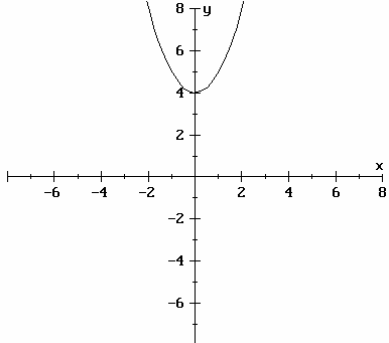
123.	Perform the indicated operations. Assume that all variables represent positive numbers. $4\sqrt[3]{2p^4} + p\sqrt[3]{54p} - \sqrt[3]{16p}$	5.4	$7p\sqrt[3]{2p} - 2\sqrt[3]{2p}$ or $(7p - 2)\sqrt[3]{2p}$
124.	Perform the indicated operations. Assume that all variables represent positive numbers. $\sqrt{20x^5y^6} - 7xy\sqrt{45x^3y^4} + y^2\sqrt{40x^4y}$	5.4	$-19x^2y^3\sqrt{5x} + 2x^2y^2\sqrt{10y}$
125.	Perform the indicated operations. $\frac{3}{\sqrt{2}} - 3\sqrt{2}$	5.4	$-\frac{3\sqrt{2}}{2}$
126.	Perform the indicated operations. $\frac{2}{\sqrt[3]{5}} - \sqrt[3]{200}$	5.4	$-\frac{8\sqrt[3]{25}}{5}$
127.	Perform the indicated operations. Assume that all variables represent positive numbers. $\sqrt{\frac{x}{3}} + 7\sqrt{3x} - \sqrt{\frac{3}{x}}$	5.4	$\frac{22x\sqrt{3x} - 3\sqrt{3x}}{3x}$ or $\frac{(22x - 3)\sqrt{3x}}{3x}$
128.	Perform the indicated operations. Assume that all variables represent positive numbers. $\sqrt[3]{\frac{x}{2}} - \sqrt[3]{108x}$	5.4	$-\frac{5\sqrt[3]{4x}}{2}$
129.	Perform the indicated multiplication and simplify the answer. $3\sqrt{2}(5 + \sqrt{10} - 3\sqrt{2})$	5.5	$15\sqrt{2} + 6\sqrt{5} - 18$
130.	Perform the indicated multiplication and simplify the answer. Assume that all variables represent positive numbers. $\sqrt{3x}(\sqrt{x} - \sqrt{3} + x)$	5.5	$x\sqrt{3} - 3\sqrt{x} + x\sqrt{3x}$

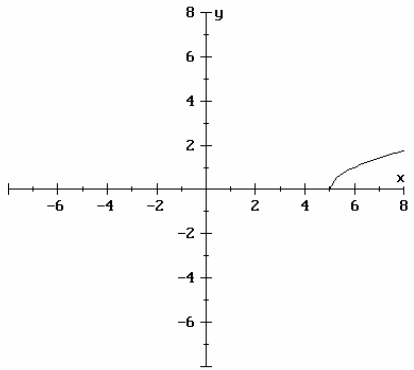
131.	Perform the indicated multiplication and simplify the answer. $(\sqrt{3} + 5)(\sqrt{7} - 1)$	5.5	$\sqrt{21} - \sqrt{3} + 5\sqrt{7} - 5$
132.	Perform the indicated multiplication and simplify the answer. Assume that all variables represent positive numbers. $(3\sqrt{x} - \sqrt{y})(3\sqrt{x} + 4\sqrt{y})$	5.5	$9x + 9\sqrt{xy} - 4y$
133.	Perform the indicated multiplication and simplify the answer. $(\sqrt{6} - \sqrt{2})^2$	5.5	$8 - 4\sqrt{3}$
134.	Perform the indicated multiplication and simplify the answer. Assume that all variables represent positive numbers. $(2\sqrt{y} + 1)^2$	5.5	$4y + 4\sqrt{y} + 1$
135.	Perform the indicated multiplication and simplify the answer. $(\sqrt{7} + \sqrt{3})(\sqrt{7} - \sqrt{3})$	5.5	4
136.	Perform the indicated multiplication and simplify the answer. Assume that all variables represent positive numbers. $(\sqrt{x} - 2)(\sqrt{x} + 2)$	5.5	$x - 4$
137.	Rationalize the denominator of the following radical expressions. $\frac{3}{\sqrt{5} + 2}$	5.5	$3\sqrt{5} - 6$

138.	Rationalize the denominator of the following radical expressions. $\frac{\sqrt{10} + 2}{2 + \sqrt{2}}$	5.5	$2 - \sqrt{2} + \sqrt{10} - \sqrt{5}$
139.	Rationalize the denominator of the following radical expressions. Assume that all variables represent positive numbers. $\frac{4\sqrt{3x} - 5\sqrt{2y}}{3\sqrt{6x} - 6\sqrt{8y}}$	5.5	$\frac{6x\sqrt{2} + 8\sqrt{6xy} - 5\sqrt{3xy} - 20y}{9x - 48y}$
140.	Find the solution(s) of the following radical equation. $\sqrt{4x + 5} - 3 = 0$	5.6	{1}
141.	Find the solution(s) of the following radical equation. $\sqrt{6x - 1} = \sqrt{x^2 + 4x}$	5.6	{1}
142.	Find the solution(s) of the following radical equation. $\sqrt[3]{2x - 7} + 6 = 5$	5.6	{3}
143.	Find the solution(s) of the following radical equation. $\sqrt{x^2 - 3x + 1} + 2 = x$	5.6	{3}
144.	Find the solution(s) of the following radical equation. $\sqrt{5x - 4} - \sqrt{x + 5} = \sqrt{x - 3}$	5.6	$\left\{4, \frac{24}{5}\right\}$
145.	Express the following in the form $a + bi$ and simplify. $-\sqrt{-16}$	5.7	$-4i$

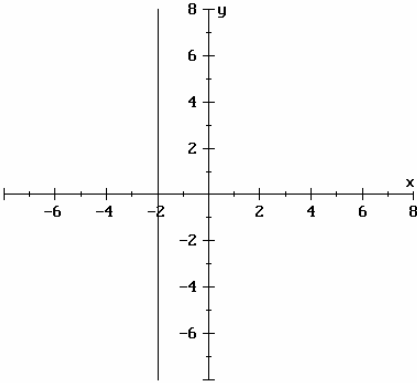
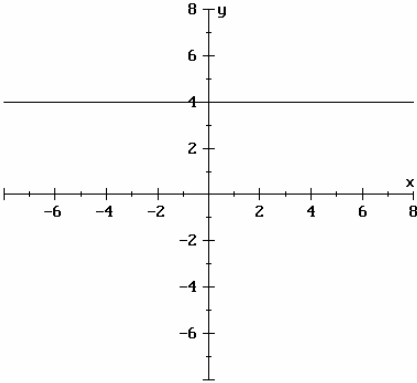
146.	Express the following in the form $a + bi$ and simplify. $\sqrt{-25} + \sqrt{-81}$	5.7	$14i$
147.	Express the following in the form $a + bi$ and simplify. $-\sqrt{-4} \cdot \sqrt{-81}$	5.7	18
148.	Express the following in the form $a + bi$ and simplify. $\frac{\sqrt{-36}}{\sqrt{-9}}$	5.7	2
149.	Express the following in the form $a + bi$ and simplify. $\sqrt{-18} + \sqrt{-8}$	5.7	$5\sqrt{2}i$
150.	Express the following in the form $a + bi$ and simplify. $\sqrt{-12} \cdot \sqrt{-6}$	5.7	$-6\sqrt{2}$
151.	Express the following in the form $a + bi$ and simplify. $\sqrt{-7} \cdot \sqrt{7}$	5.7	$7i$
152.	Perform the indicated operations. Express the answer in the form $a + bi$. $\left(\frac{1}{2} + 3i\right) + (2 + i)$	5.7	$\frac{5}{2} + 4i$
153.	Perform the indicated operations. Express the answer in the form $a + bi$. $(4 - 5i) - (1 + 7i)$	5.7	$3 - 12i$

154.	Perform the indicated operations. Express the answer in the form $a + bi$. $6(5 + 8i)$	5.7	$30 + 48i$
155.	Perform the indicated operations. Express the answer in the form $a + bi$. $3i(1 - 4i)$	5.7	$12 + 3i$
156.	Perform the indicated operations. Express the answer in the form $a + bi$. $(-2 + 6i)(4 + 9i)$	5.7	$-62 + 6i$
157.	Perform the indicated operations. Express the answer in the form $a + bi$. $(6 - 5i)(6 + 5i)$	5.7	61
158.	Perform the indicated operations. Express the answer in the form $a + bi$. $(2 + 7i)^2$	5.7	$-45 + 28i$
159.	Perform the indicated divisions. Express the answer in the form $a + bi$. $\frac{5 + 3i}{2i}$	5.7	$\frac{3}{2} - \frac{5}{2}i$
160.	Perform the indicated divisions. Express the answer in the form $a + bi$. $\frac{4}{1 + 3i}$	5.7	$\frac{2}{5} - \frac{6}{5}i$
161.	Perform the indicated divisions. Express the answer in the form $a + bi$. $\frac{5i}{1 - 2i}$	5.7	$-2 + i$

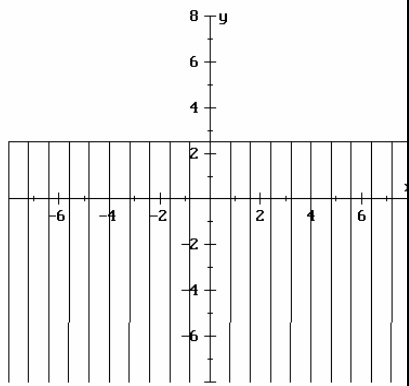
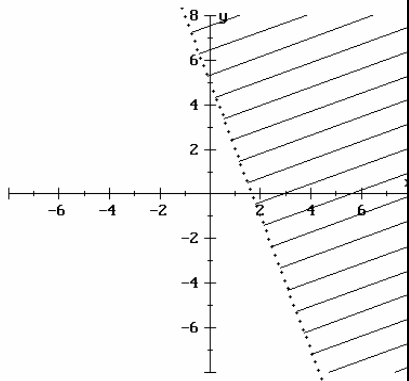
162.	Perform the indicated divisions. Express the answer in the form $a + bi$. $\frac{32 - 4i}{1 - 5i}$	5.7	$2 + 6i$
163.	Simplify. i^{20}	5.7	1
164.	Simplify. i^{53}	5.7	i
165.	Simplify. i^{35}	5.7	$-i$
166.	Simplify. $3i^{-25}$	5.7	$-3i$
167.	Graph the following equation: $2x - 3y = 6$	6.1	
168.	Graph the following equation: $y = x^2 + 4$	6.1	

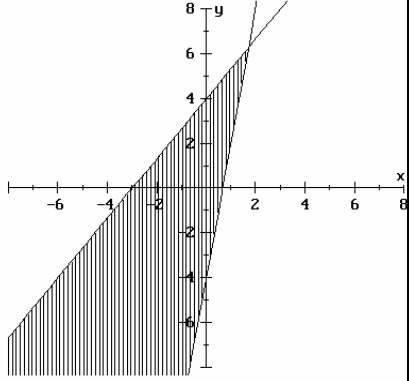
169.	Graph the following equation: $y = \sqrt{x-5}$	6.1	
170.	Find the domain and range, and determine if the following relation is a function. $3x + 2y = 6$	6.2	Domain = {All real numbers} Range = {All real numbers} function
171.	Find the domain and range, and determine if the following relation is a function. $y = x^2 + 3$	6.2	Domain = {All real numbers} Range = $\{y \mid y \geq 3\}$ function
172.	Find the domain and range, and determine if the following relation is a function. $y = \sqrt{x-5}$	6.2	Domain = $\{x \mid x \geq 5\}$ Range = $\{y \mid y \geq 0\}$ function
173.	If $g(x) = 5x - 2$, find the following: $g(2)$	6.3	8
174.	If $f(x) = 4x^2 - 3x + 7$, find the following: $[f(-3)]^2$	6.3	2704
175.	If $f(x) = 4x^2 - 3x + 7$ and $g(x) = 5x - 2$, find the following: $4f(-3) - 5g(2)$	6.3	168

176.	If $f(x) = 4x^2 - 3x + 7$ and $g(x) = 5x - 2$, find the following: $f(x) + g(x)$	6.3	$4x^2 + 2x + 5$
177.	If $f(x) = 4x^2 - 3x + 7$ and $g(x) = 5x - 2$, find the following: $f(x) \cdot g(x)$	6.3	$20x^3 - 23x^2 + 41x - 14$
178.	If $g(x) = 5x - 2$, find the following: $g(a) + g(h)$	6.3	$5a + 5h - 4$
179.	If $g(x) = 5x - 2$, find the following: $g(a + h)$	6.3	$5a + 5h - 2$
180.	If $g(x) = 5x - 2$, find the following: $\frac{g(a + h) - g(a)}{h}$	6.3	5
181.	If $f(x) = 4x^2 - 3x + 7$ and $g(x) = 5x - 2$, find the following: $f(g(2))$	6.3	239
182.	Sketch the graph of the following linear equation and find all intercepts. $3y - 4x = 12$	6.4	<p>x - int: $(-3, 0)$ y - int: $(0, 4)$</p>

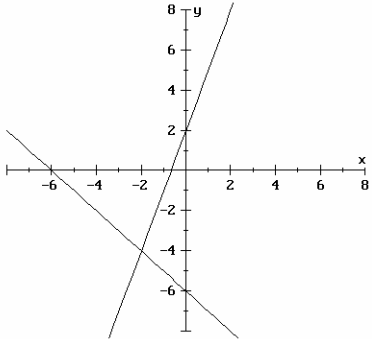
183.	<p>Sketch the graph of the following linear equation and find all intercepts.</p> $x = -2$	6.4	 <p>x - int: $(-2,0)$</p>
184.	<p>Sketch the graph of the following linear equation and find all intercepts.</p> $y = 4$	6.4	 <p>y - int: $(0,4)$</p>
185.	<p>Find the slope of the line passing through the following points: $(1,-3)$ and $(7,6)$</p>	6.4	$\frac{3}{2}$
186.	<p>Find the slope of the line passing through the following points: $(2,4)$ and $(2,7)$</p>	6.4	Undefined
187.	<p>Find the slope of the line passing through the following points: $(-1,-3)$ and $(5,-3)$</p>	6.4	0

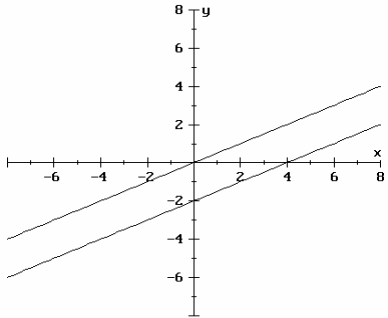
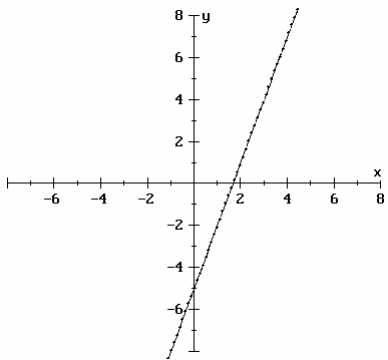
188.	Find the slope of the following line. $3y - 4x = 12$	6.4	$\frac{4}{3}$
189.	Find the slope of the following line. $x = -2$	6.4	Undefined
190.	Find the slope of the following line. $y = 4$	6.4	0
191.	Find the equation of the following line. Write the answer in slope-intercept form, if possible. $m = -\frac{3}{2}$, through $(0,7)$	6.5	$y = -\frac{3}{2}x + 7$
192.	Find the equation of the following line. Write the answer in slope-intercept form, if possible. m is undefined, through $(-3,-5)$	6.5	$x = -3$
193.	Find the equation of the following line. Write the answer in slope-intercept form, if possible. through $(1,-3)$ and $(7,6)$	6.5	$y = \frac{3}{2}x - \frac{9}{2}$
194.	Find the equation of the following line. Write the answer in slope-intercept form, if possible. through $(0,3)$ parallel to $2x + 5y = 11$	6.5	$y = -\frac{2}{5}x + 3$
195.	Find the equation of the following line. Write the answer in slope-intercept form, if possible. through $(-1,-4)$ perpendicular to $3y - 4x = 10$	6.5	$y = -\frac{3}{4}x - \frac{19}{4}$
196.	Find the equation of the following line. Write the answer in slope-intercept form, if possible. $m = 4$, through $(5,-3)$	6.5	$y = 4x - 23$

197.	Find the equation of the following line. Write the answer in slope-intercept form, if possible. $m = 0$, through $(-2,1)$	6.5	$y = 1$
198.	Find the equation of the following line. Write the answer in slope-intercept form, if possible. through $(2,6)$ parallel to $\frac{y}{3} + 1 = 4$	6.5	$y = 6$
199.	Find the equation of the following line. Write the answer in slope-intercept form, if possible. through $(2,6)$ perpendicular to $\frac{y}{3} + 1 = 4$	6.5	$x = 2$
200.	Sketch the graph of the solution set of: $y \leq \frac{5}{2}$	6.7	
201.	Sketch the graph of the solution set of: $3x + y > 5$	6.7	

202.	<p>Sketch the graph of the solution set of:</p> $3y - 4x \leq 12$ $6x - y \leq 4$	6.7	
203.	<p>(a) The area of an equilateral triangle varies directly as the square of the side. Write an equation for this sentence.</p> <p>(b) The area is $9\sqrt{3}$ sq in. when the side is 6 in. long. Determine the constant of variation.</p>	6.8	<p>(a) $A = ks^2$</p> <p>(b) $k = \frac{\sqrt{3}}{4}$</p>
204.	<p>The weight of a body near the surface of the earth varies inversely as the square of the distance of that body from the center of the earth. A man standing on the surface of the earth is approximately 4000 mi from the center of the earth. If he weighs 200 lb there, how much would he weigh if he were 400 mi above the surface of the earth?</p>	6.8	Approximately 165 lb
205.	<p>y varies jointly as x and z. $y=2$ when $x=3$ and $z=5$. What is the value of y when $x=8.4$ and $z=505$?</p>	6.8	565.6
206.	<p>Use the Extraction of Roots Theorem to find the solutions of:</p> $x^2 + 81 = 0$	7.3	$\pm 9i$
207.	<p>Find the solutions of the following quadratic equation by completing the square.</p> $25x^2 + 30x - 16 = 0$	7.3	$-\frac{8}{5}$ or $\frac{2}{5}$
208.	<p>If the square is completed on the equation $x^2 - 8x + 13 = 0$, what is a result?</p>	7.3	$(x - 4)^2 = 3$

209.	Use the Quadratic Formula to find the solution of the following equation. $9x^2 - 30x + 29 = 0$	7.4	$\frac{5 \pm 2i}{3}$
210.	Use the discriminant to characterize the solutions of the following quadratic equation. $9x^2 - 12x + 4 = 0$	7.4	one rational solution
211.	Use the discriminant to characterize the solutions of the following quadratic equation. $2x^2 - 7x - 4 = 0$	7.4	two rational solutions
212.	Use the discriminant to characterize the solutions of the following quadratic equation. $3x^2 - 5x + 1 = 0$	7.4	two irrational solutions
213.	Use the discriminant to characterize the solutions of the following quadratic equation. $5x^2 - x + 6 = 0$	7.4	two imaginary solutions
214.	Determine the value(s) of m so that the following quadratic equation will have one rational solution. $3x^2 + 2x - m = 0$	7.4	$m = -\frac{1}{3}$
215.	Determine the real values of m so that the following quadratic equation will have two imaginary solutions. $mx^2 + 5x + 3 = 0$	7.4	$m > \frac{25}{12}$
216.	Find the solution of the following problem. If the solution is irrational, determine a decimal approximation of the solution. One pipe can fill a tank 3 hr faster than another pipe. Together they fill the tank in 5 hr. How long does it take each pipe to fill the tank?	7.6	$\frac{7 + \sqrt{109}}{2} \approx 8.7$ hr and $\frac{13 + \sqrt{109}}{2} \approx 11.7$ hr

217.	Find the solution of the following equation. $4x^4 - 7x^2 + 3 = 0$	7.7	$\pm \frac{\sqrt{3}}{2}, \pm 1$
218.	Find the solution of the following equation. $4x - 4\sqrt{x} - 3 = 0$	7.7	$\frac{9}{4}$
219.	Find the solution of the following equation. $4(x-4)^2 - 12(x-4) + 5 = 0$	7.7	$\frac{9}{2}, \frac{13}{2}$
220.	Find the solution of the following equation. $3x^{-2} - 11x^{-1} + 8 = 0$	7.7	$\frac{3}{8}, 1$
221.	Find the solution of the following equation. $6x^{\frac{2}{3}} + x^{\frac{1}{3}} - 12 = 0$	7.7	$-\frac{27}{8}, \frac{64}{27}$
222.	Find the solution of the following equation. $\left(\frac{2x}{x+1}\right)^2 - 10\left(\frac{2x}{x+1}\right) + 21 = 0$	7.7	$-\frac{7}{5}, -3$
223.	Find the solution of the following equation. $4x^3 + 12x^2 - x - 3 = 0$	7.7	$\pm \frac{1}{2}, -3$
224.	Using graphs, determine the solution of the following linear system of equations. Identify the system as independent, inconsistent, or dependent. $x + y = -6$ $3x - y = -2$	9.1	 $\{(-2, -4)\}$; independent

225.	<p>Using graphs, determine the solution of the following linear system of equations. Identify the system as independent, inconsistent, or dependent.</p> $x - 2y = 4$ $2x - 4y = 0$	9.1	 <p>\emptyset; inconsistent</p>
226.	<p>Using graphs, determine the solution of the following linear system of equations. Identify the system as independent, inconsistent, or dependent.</p> $6x - 2y = 10$ $3x - y = 5$	9.1	 <p>$\{(x, y) 3x - y = 5\}$; dependent</p>
227.	<p>Using the substitution method, determine the solution of the following linear system of equations. Identify the system as independent, inconsistent, or dependent.</p> $2x + 4y = -11$ $x + y = -3$	9.1	$\left(-\frac{1}{2}, -\frac{5}{2}\right)$; independent
228.	<p>Using the substitution method, determine the solution of the following linear system of equations. Identify the system as independent, inconsistent, or dependent.</p> $6x - 2y = 10$ $9x - 3y = 15$	9.1	$\{(x, y) 6x - 2y = 10\}$; dependent

229.	<p>Using the elimination method, determine the solution of the following linear system of equations. Identify the system as independent, inconsistent, or dependent.</p> $2x + 8y = 7$ $x + 4y = 1$	9.1	\emptyset ; inconsistent
230.	<p>Using the elimination method, determine the solution of the following linear system of equations. Identify the system as independent, inconsistent, or dependent.</p> $2x - 5y = 13$ $-3x + 6y = -16$	9.1	$\left(\frac{2}{3}, -\frac{7}{3}\right)$; independent
231.	<p>Using the elimination method, determine whether the following linear system is independent, inconsistent, or dependent. If the system is independent, find the solution.</p> $3x + 4y + 2z = -2$ $-x + 3y - z = -1$ $2x + y + z = 3$	9.2	$(6, -1, -8)$; independent