Algebra/Pre-calc Review Solutions

Exponents (page 3)
(1) \((-4)^5\) \hspace{1cm} (2) \((-5)^8\) \hspace{1cm} (3) 1
(4) \(-1\) \hspace{1cm} (5) 1 \hspace{1cm} (6) 2^{10}
(7) \(8x^{15}y^{12}\) \hspace{1cm} (8) \(16m^6n^{18}\) \hspace{1cm} (9) \(-p^8q^{-2}\)
(10) \(r^{24}s^{-6}\) \hspace{1cm} (11) \(x^8\) \hspace{1cm} (12) \(x^{21}\)

(13) \(-\frac{1}{3^7}\) \hspace{1cm} (14) \(\frac{1}{3^{10}}\) \hspace{1cm} (15) \(25\)
(16) \(\frac{1}{125}\) \hspace{1cm} (17) \(\frac{2}{5^x}\) \hspace{1cm} (18) \(\frac{1}{25y^7}\)
(19) \(\frac{x^2}{y^7}\) \hspace{1cm} (20) \(\frac{x}{y^{11}}\) \hspace{1cm} (21) \(\frac{5m^2n^5}{r^3}\)
(22) \(\frac{2y^4}{x^7}\) \hspace{1cm} (23) \(\frac{4^{10}}{x^6}\) \hspace{1cm} (24) \(\frac{1}{y^7}\)

(25) \(\frac{1}{27}\) \hspace{1cm} (26) \(\frac{1}{5^8}\) \hspace{1cm} (27) \(\frac{1}{3^{10}}\)
(28) 1 \hspace{1cm} (29) \(\frac{1}{3^7}\) \hspace{1cm} (30) \(\frac{1}{7^3}\)
(31) \(\frac{1}{8^{15}}\) \hspace{1cm} (32) \(-4a^5\) \hspace{1cm} (33) \(\frac{y^6}{x^{12}}\)
(34) 1 \hspace{1cm} (35) \(\frac{y^8}{x^{12}}\) \hspace{1cm} (36) \(\frac{z}{108}\)

Radicals and Rational Exponents (page 5)
(1) \(5\) \hspace{1cm} (2) \(4\) \hspace{1cm} (3) \(4x^2\)
(4) \(32\) \hspace{1cm} (5) \(\frac{10^3}{11}\) \hspace{1cm} (6) \(\frac{7}{x}\)
(7) undefined \hspace{1cm} (8) \(9x^4\) \hspace{1cm} (9) \(\frac{1}{16}\)
(10) \(6r^3\) \hspace{1cm} (11) \(32a^{10}\) \hspace{1cm} (12) 2
(13) \(m^{7/3}\) \hspace{1cm} (14) \(\frac{6^{2/3}}{y^{1/2}}\) \hspace{1cm} (15) \(\frac{4a^{1/2}}{6^{1/3}}\)
(16) \(\frac{x^{10}y^3}{4z^2}\) \hspace{1cm} (17) \(x^2\) \hspace{1cm} (18) \(\frac{1}{x^5y^3}\)

Adding Fractions (page 6)
(1) \(\frac{7}{12y}\) \hspace{1cm} (2) \(\frac{x-1}{x+2}\) \hspace{1cm} (3) \(\frac{x^2+1}{y-2}\)
(4) \(11\) \hspace{1cm} (5) \(\frac{y-2}{64y+27}\) \hspace{1cm} (6) \(\frac{9x-11}{9-4x^2}\)
(7) \(\frac{-5n^2+2+7}{n^2}\) \hspace{1cm} (8) \(\frac{g}{a(a-3)}\) \hspace{1cm} (9) \(\frac{3+2x-2x^2}{2x^2(x-2)}\)

Functions (page 8)
(1) \(\frac{1}{y}\) \hspace{1cm} (2) \(\frac{a}{y+9}\) \hspace{1cm} (3) \(\frac{1}{a-x}\)
(4) \(\frac{1}{a^2+9}\) \hspace{1cm} (5) \(\frac{a+9}{a^2+9}\) \hspace{1cm} (6) \(a+9\)
(7) \(\frac{4}{1}\) \hspace{1cm} (8) \(16\) \hspace{1cm} (9) \(\frac{1}{(a+9)^2}\)

(10) \(8\) \hspace{1cm} (11) \(8y^2\) \hspace{1cm} (12) \(27x^4\)
(13) \(2p^2+1\) \hspace{1cm} (14) \(2p^2+4p+2\) \hspace{1cm} (15) \(4p+2\)
(16) \(2a^2+4ah+2h^2\) \hspace{1cm} (17) \(8+8h+2h^2\) \hspace{1cm} (18) \(4a+2h\)
Logarithms (page 10)

1. \(3^3 = 27\)
2. \(2^{-3} = 1/8\)
3. \(5^3 = 125\)
4. \(\log_3 81 = 3\)
5. \(\log_{10}(0.01) = -2\)
6. \(\log_8(1/4) = -2/3\)
7. \(3\)
8. \(-3\)
9. \(3/2\)
10. \(-1\)
11. \(2\)
12. \(-8\)
13. \(\log_4 3 + \log_4 y\)
14. \(\log_b x - \log_b z\)
15. \(3 \log_b x\)
16. \(\frac{1}{2} \log_3 5\)
17. \(3 \log_3 y + \log_3 z\)
18. \(2 \log_3 2 + 2 \log_3 x\)
19. \(\log_b 2 + 2 \log_b x + 3 \log_b y\)
20. \(4 \log_b 2 + 4 \log_b x + 4 \log_b y\)
21. \(\frac{3}{5} \log_3 x\)
22. \(\log_b 4 + \frac{1}{2} \log_b x - 2 \log_b y\)
23. \(2y(\log_b x - \log_b 4)\)
24. \(\log_b 7 + 3 \log_b x + 2 \log_b y - \frac{1}{2} \log_b z\)
25. \(\log_{10} 100 = 2\)
26. \(\log_2 \frac{1}{4} = -2\)
27. \(\log_3(3^3)\)
28. \(\log_2 \frac{xy}{z}\)
29. \(\log_5 \frac{x}{y^{1/2}}\)
30. \(\log_3(y^{16})\)

Trigonometry (page 14)

1. \(0\)
2. \(1\)
3. \(0\)
4. \(0\)
5. \(-1\)
6. \(1/\sqrt{2}\)
7. \(1\)
8. \(0\)
9. \(0\)
10. \(1/\sqrt{2}\)
11. \(\sqrt{3}/2\)
12. \(\sqrt{3}/2\)
13. \(1\)
14. \(1/2\)
15. \(-1/\sqrt{2}\)
16. \(0\)
17. \(-1\)
18. \(1/2\)

Formulas and Identities (page 15)

1. \(\cos \theta\)
2. \(\sec^2 \theta\)
3. \(\sin x\)
4. \(1\)
5. \(\sec x\)
6. \(1\)
7. \(\) no simplification
8. \(-\cot \theta\)
9. \(2 \cos x\)

Inverse Trigonometric Functions (page 18)

1. \(\pi/2\)
2. \(0\)
3. \(0\)
4. \(\pi/4\)
5. \(\pi/6\)
6. \(\pi/3\)
7. \(\pi/6\)
8. \(-\pi/4\)
9. \(\pi/3\)

Factoring (page 20)

1. \((x + 5)(x + 2)\)
2. \((x + 4)(x + 2)\)
3. \((x - 5)(x + 3)\)
4. \((y + 5)(y - 1)\)
5. \((x - 4)(x - 3)\)
6. \((x + 4)^2\)
7. \((6a - 10)(a + 2)\)
8. \((8x - 8)(x + 5)\)
9. \((9y + 3)(y + 1)\)
10. \((2x + 10)(x + 1)\)
11. \((h - 8)(h - 6)\)
12. \((12)(x + 7)(x + 3)\)
13. \((3a - 4)(3a + 4)\)
14. \((4x - 5)(4x + 5)\)
15. \((x^2 - 9)(x^2 + 9)\)
16. \((5x - 3y)(5x + 3y)\)
17. \((17)(2m^2 - 4)(2m^2 + 4)\)
18. \((18)(16x - 25y)(16x + 25y)\)

Solving Quadratic Equations (page 21)
(1) 1, $-7/2$
(2) $\frac{1}{2}(3 + \sqrt{17})$, $\frac{1}{2}(3 - \sqrt{17})$
(3) 0, 2, $-2$
(4) 3, 4
(5) $\frac{5}{6}(-9 + \sqrt{69})$, $\frac{5}{6}(-9 - \sqrt{69})$
(6) 0, $-1$, $-2$
(7) 1, 4
(8) $\frac{1}{10}(3 + \sqrt{129})$, $\frac{1}{10}(3 - \sqrt{129})$
(9) 0, 3
(10) 0, 2, $-2$
(11) 0, 2, $-2$
(12) $\frac{1}{6}(9 + \sqrt{201})$, $\frac{1}{6}(9 - \sqrt{201})$

Equations of Lines (page 22)

(1) $m = -1/3$
(2) $m = -8/5$
(3) undefined
(4) $y + 4 = \frac{1}{2}(x - 3)$
(5) $y - 7 = x$
(6) $y = 6$
(5) $y + 2 = \frac{2}{3}x$