Algebra/Pre-calc Review Solutions

Exponents (page 3)

(1) $(-4)^5$ (2) $(-5)^8$ (3) 1 (4) -1 (5) 1 (6) 2^{10} (7) $8x^{15}y^{12}$ (8) $16m^6n^{18}$ (9) $-p^8q^{-2}$

(10) $r^{24}s^{-6}$ (11) x^8 (12) x^{21} (13) $-\frac{1}{4^3}$ (14) $\frac{1}{25}$ (15) 25 (16) $\frac{1}{125}$ (17) $\frac{3}{x^2}$ (18) $\frac{1}{25y^2}$

(19) $\frac{x^2}{y}$ (20) $\frac{x}{y^3}$ (21) $\frac{5m^2}{n^4}$ (22) $\frac{2y^4}{x^3}$ (23) $\frac{1}{x^6y^{10}}$ (24) $\frac{1}{y^3}$ (25) $\frac{1}{2^7}$ (26) $\frac{1}{5^8}$ (27) $\frac{1}{9^5}$

(28) 1 (29) $\frac{1}{3^5}$ (30) $\frac{7^2}{r}$ (31) $\frac{r^6}{s^{15}}$ (32) $-4a^5$ (33) $\frac{y^3}{4x^5}$ (34) 1 (35) $\frac{1}{x^{12}y^8}$ (36) $\frac{z}{108}$

Radicals and Rational Exponents (page 5)

(1) 5 (2) 4 (3) $4x^2$ (4) 32 (5) $\dfrac{10^3}{11^3}$ (6) $\dfrac{27}{8}$ (7) undefined (8) $9x^4$ (9) $\dfrac{1}{16}$

10) $6r^3$ (11) $32a^{10}$ (12) 2 (13) $m^{7/3}$ (14) $\dfrac{6z^{2/3}}{y^{5/4}}$ (15) $\dfrac{4a^{1/2}}{b^{7/3}}$ (16) $\dfrac{x^{10}y}{4z^2}$ (17) x^2 (18) $\dfrac{1}{x^8y^4}$

Adding Fractions (page 6)

(1) $\dfrac{7}{12x}$ (2) $\dfrac{x-1}{x+2}$ (3) $\dfrac{z^2+1}{z}$ (4) $\dfrac{11}{24y}$ (5) $\dfrac{y-2}{6(3y+2)}$ (6) $\dfrac{6x+11}{4x^2-9}$

(7) $\dfrac{-5n^2+2n+7}{n^2}$ (8) $\dfrac{9}{a(a-3)}$ (9) $\dfrac{3+2x-2x^2}{2x^2(x-2)}$

Functions (page 8)

(1) $\frac{1}{11}$ (2) $\frac{a}{1+9a}$ (3) $\frac{1}{9-x}$ (4) $\frac{1}{\sqrt{a}+9}$ (5) $\frac{1}{a^2+9}$ (6) $a+9$

(7) 4 (8)16 (9) $\frac{1}{(a+9)^2}$ (10) 8 (11) $8y^2$ (12) $72x^4$

(13) $2p^2+1$ (14) $2p^2+4p+2$ (15) $4p+2$ (16) $2a^2+4ah+2h^2$ (17) $8+8h+2h^2$ (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) $\log_{10}(.01) = -2$
(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) $3\log_6 x$
(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) $\frac{3}{5}\log_b x$
(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) $\log_5 \frac{x}{y^{1/5}}$
(30) $\log_3(yt^{16})$

Trigonometry (page 14)

(1) 0 (2) 1 (3) 0 (4) 0 (5) -1 (6) $\frac{\sqrt{2}}{2}$ (7) 1 (8) 0 (9) 0

(10) $\frac{\sqrt{2}}{2}$ (11) $\frac{\sqrt{3}}{2}$ (12) $\frac{\sqrt{3}}{2}$ (13) 1 (14) $\frac{1}{2}$ (15) $-\frac{\sqrt{2}}{2}$ (16) 0 (17) -1 (18) $\frac{1}{2}$

Formulas and Identities (page 15)

(1) $\cos\theta$ (2) $\sec^2\theta$ (3) $\sin x$ (4) 1 (5) $\sec x$ (6) 1 (7) $\sec\theta + \tan\theta$ (8) $-\cot\theta$ (9) $2\cos x$

Inverse Trigonometric Functions (page 18)

(1) $\frac{\pi}{2}$ (2) 0 (3) 0 (4) $\frac{\pi}{4}$ (5) $\frac{\pi}{6}$ (6) $\frac{\pi}{3}$ (7) $\frac{\pi}{6}$ (8) $-\frac{\pi}{4}$ (9) $\frac{\pi}{3}$

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) $6(a-10)(a+2)$
(8) $8(x-8)(x+5)$
(9) $3y(y+3)(y+1)$
(10) $2(x+10)(x+1)$
(11) $(h-8)(h-6)$
(12) $x(x+7)(x+3)$
(13) $(3a-4)(3a+4)$
(14) $(4x-5)(4x+5)$
(15) $(x-3)(x+3)(x^2+9)$
(16) $(5x-3y)(5x+3y)$
(17) $4(m-\sqrt{2})(m+\sqrt{2})(m^2+2)$
(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) $\frac{1}{6}(-9+\sqrt{69}),\ \frac{1}{6}(-9-\sqrt{69})$ (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) $y = 6$ (7) $y + 2 = \frac{2}{3}x$