

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) $\frac{1}{2^5}$	(15) 25
(16) $\frac{1}{12^5}$	(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) $\frac{y^{10}}{x^6}$	(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) $\frac{y^8}{x^{12}}$	(36) $\frac{z}{108}$

Radicals and Rational Exponents (page 5)

(1) 5	(2) 4	(3) $4x^2$
(4) 32	(5) $\frac{10^3}{11^3}$	(6) $\frac{27}{8}$
(7) undefined	(8) $9x^4$	(9) $\frac{1}{16}$
(10) $6r^3$	(11) $32a^{10}$	(12) 2

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

Adding Fractions (page 6)

(1) $\frac{7}{12x}$	(2) $\frac{x-1}{x+2}$	(3) $\frac{z^2+1}{z}$
(4) $\frac{11}{24y}$	(5) $\frac{y-2}{6(3y+2)}$	(6) $\frac{-6x-11}{9-4x^2}$
(7) $\frac{-5n^2+2n-7}{n^2}$	(8) $\frac{9}{a(a-3)}$	(9) $\frac{3+2x-2x^2}{2x^2(x-2)}$

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)

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|---|---|--|
| (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) $1/\sqrt{2}$ |
| (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)

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|-----------------------|---------------------|----------------|
| (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)

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|-------------|--------------|-------------|
| (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)

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|-----------------------|-------------------------|---------------------------|
| (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) $(x^2-9)(x^2+9)$ |
| (16) $(5x-3y)(5x+3y)$ | (17) $(2m^2-4)(2m^2+4)$ | (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) $y = 6$
(5) $y + 2 = \frac{2}{3}x$