Algebra 2 Final Exam Review Spring 2015

Chapter 7

1. Simplify each. Use absolute value symbols when necessary. a) $\sqrt[4]{c^6d^8e^{13}}$ b) $\sqrt[5]{m^{12}p^{15}r^{22}}$

For 2 and 3, assume all variables are positive.

2. Simplify each. a) $\sqrt{15E^3F} \cdot \sqrt{3E^7F^8}$ b) $\dfrac{\sqrt{48a^9b^2}}{\sqrt{2ab^7}}$

3. Rationalize the denominator. a) $\dfrac{5}{\sqrt[3]{7c^{13}d^8}}$ b) $\dfrac{8}{5+\sqrt{2}}$

4. Write in radical form. a) $E^{\frac{1}{4}}$ b) $Q^{\frac{2}{3}}$

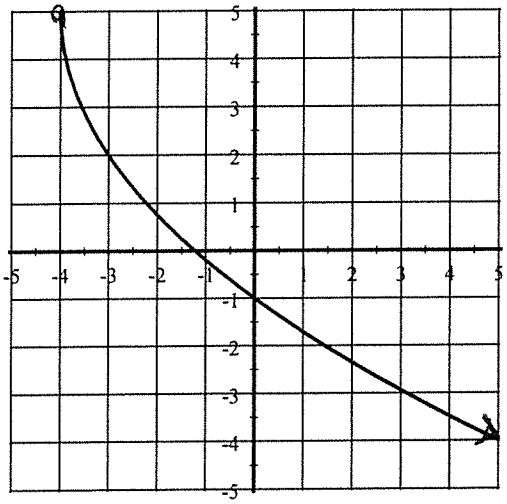
5. Write in exponential form. a) $\sqrt[7]{5a^3}$ b) $\sqrt{w^9}$

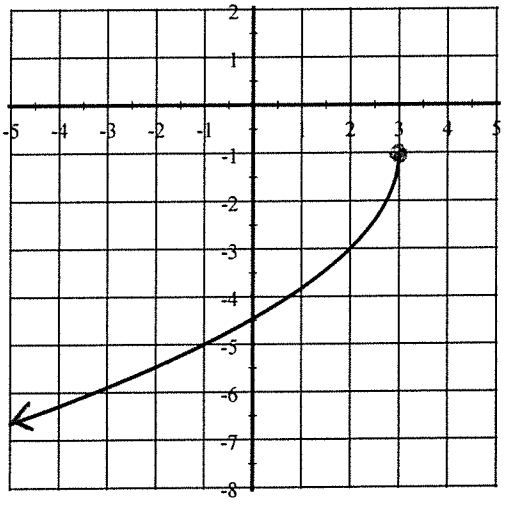
6. Solve each. a) $2\sqrt{3x+40}+5x=7x$ b) $\sqrt{x+11}+1=x$ c) $3(2x-5)^{\frac{3}{2}}+37=61$
$3(2x-5)^{\frac{3}{2}}+37=61$, Solution is: $\frac{9}{2}$

7. Simplify. $4\sqrt{50}+3\sqrt{72}-\sqrt{45}$ 8. Simplify a) $(4+\sqrt{3})(5-2\sqrt{3})$ b) $(7-2\sqrt{5})(7+2\sqrt{5})$

9. Write the equation of each square root function:

a) b)



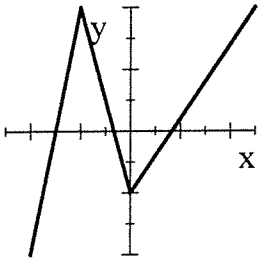


10. Write the equation of the inverse relation for each function.

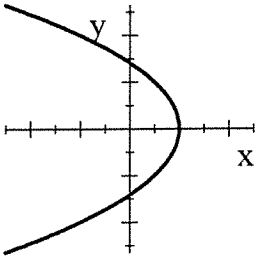
a) $f(x)=\dfrac{2x^3-3}{5}$ b) $y=-4x-7$ c) $y=4\cdot\sqrt{5x+8}-9$ d) $y=10\left(\dfrac{x+8}{7}\right)^5$

11. Tell if the inverse relation of each is a function or not.

a)



b)



Algebra 2 Final Exam Review Spring 2015 ANSWERS

Chapter 7

1. a) $|c|d^2|e^3|\sqrt[4]{c^2e}$ b) $m^2p^3r^4\sqrt[5]{m^2r^2}$

2. a) $3E^5F^4\sqrt{5F}$ b) $\dfrac{2a^4\sqrt{6}}{b^2\sqrt{b}} = \dfrac{2a^4\sqrt{6b}}{b^3}$ 3. a) $\dfrac{5\sqrt{49c^2d}}{7c^5d^3}$ b) $\dfrac{8(5-\sqrt{2})}{23} = \dfrac{40-8\sqrt{2}}{23}$

4. a) $\sqrt[4]{E}$ b) $\sqrt[3]{Q^2}$ or $\left(\sqrt[3]{Q}\right)^2$ 5. a) $(5a)^{\frac{3}{7}}$ b) $w^{\frac{9}{2}}$

6. a) $x = 8$ b) $x = 5$ c) $x = 4.5$

7. $38\sqrt{2} - 3\sqrt{5}$ 8. a) $14 - 3\sqrt{3}$ b) 29

9. a) $-3\sqrt{x+4} + 5$ b) $-2\sqrt{-(x-3)} - 1$

10. a) $f^{-1}(x) = \sqrt[3]{\dfrac{5x+3}{2}}$ b) $f^{-1}(x) = \dfrac{x+7}{-4}$ c) $f^{-1}(x) = \dfrac{\left(\frac{x+9}{4}\right)^2 - 8}{5}$ d) $f^{-1}(x) = 7 \cdot \sqrt[5]{\dfrac{x}{10}} - 8$

11. a) No a) Yes

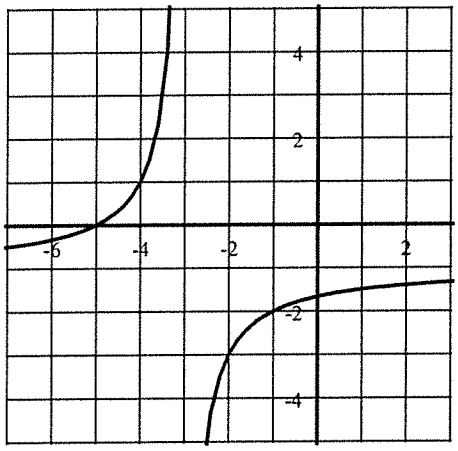
Algebra 2 Chapter 9 Final Exam Review Spring 2015

1. Find all points of discontinuity and state if they are holes or vertical asymptotes. $y = \frac{x^2 - 16}{x^2 - x - 12}$

2. Write the equation of the Horizontal Asymptote, if any.

a) $y = \frac{6x^2 + 10x - 3}{2x^2 - 5x + 1}$ b) $y = \frac{14x + 3}{7x^2 - 4x - 5}$ c) $y = \frac{8x^3 + 9x - 4}{2x^2 + 3x + 4}$

3. Write the equation of this graph which is a transformation of $y = \frac{2}{x}$



4. Solve each rational equation.

a) $\frac{5}{x+3} = \frac{2x}{x^2+5x+6} + \frac{7}{x+2}$ b) $\frac{2x^2 - 6x - 18}{x^2 + 3x + 2} + \frac{4}{x+1} = \frac{x}{x+2}$

5. Use this function: $y = \frac{x^2 + 2x - 1}{x^2 - 2x - 24} = \frac{(x+3)(x-1)}{(x-6)(x+4)}$

a) State all x-intercepts, if any. b) State all y-intercepts, if any.

Algebra 2 Ch 9 Final Exam Review Answers Spring 2015

1. Hole at $x = 4$ VA at $x = -3$
2. a) $y = 3$ b) $y = 0$ c) *NO HA*
3. $y = \frac{-2}{x+3} - 1$
4. a) $x = \frac{-11}{4}$ b) $x = 5$
5. a) $x - int = -3, 1$ b) $y - int = \frac{1}{24}$

Algebra 2 Final Exam Review Chapter 13 Spring 2015

1. Convert each radian measure into degrees. Round to the nearest hundredth when needed.

a) $\frac{9\pi}{4}$ b) $\frac{17\pi}{6}$

2. Convert each degree measure into radians.

a) $780°$ b) $75°$

3. Find the exact values of each using the Unit Circle.

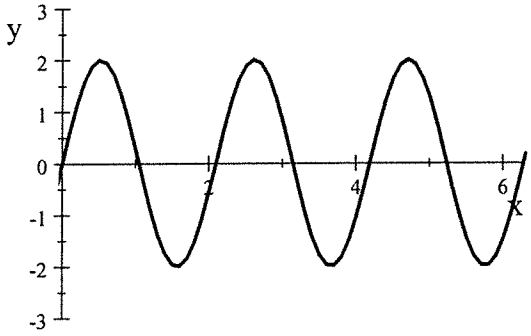
a) $\sin 810°$ b) $\cos(-450)°$ c) $\tan\frac{5\pi}{3}$ d) $\cos\frac{29\pi}{6}$ e) $\sin(-120°)$

f) $\cos 15\pi$ g) $\sin 270°$ h) $\tan\frac{7\pi}{6}$ i) $\cos\frac{3\pi}{4}$ j) $\tan 315°$

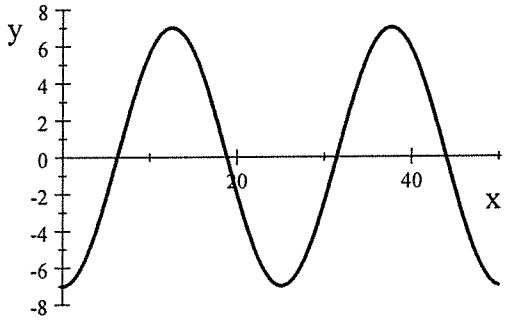
4. State the amplitude, period, equation of the midline, and phase shift of each function. Give the period and phase shift in radians.

a) $y = 9\sin\frac{2}{3}(x+\frac{\pi}{6})-5$ b) $y = -2\cos 7(x-\frac{3\pi}{4})+8$

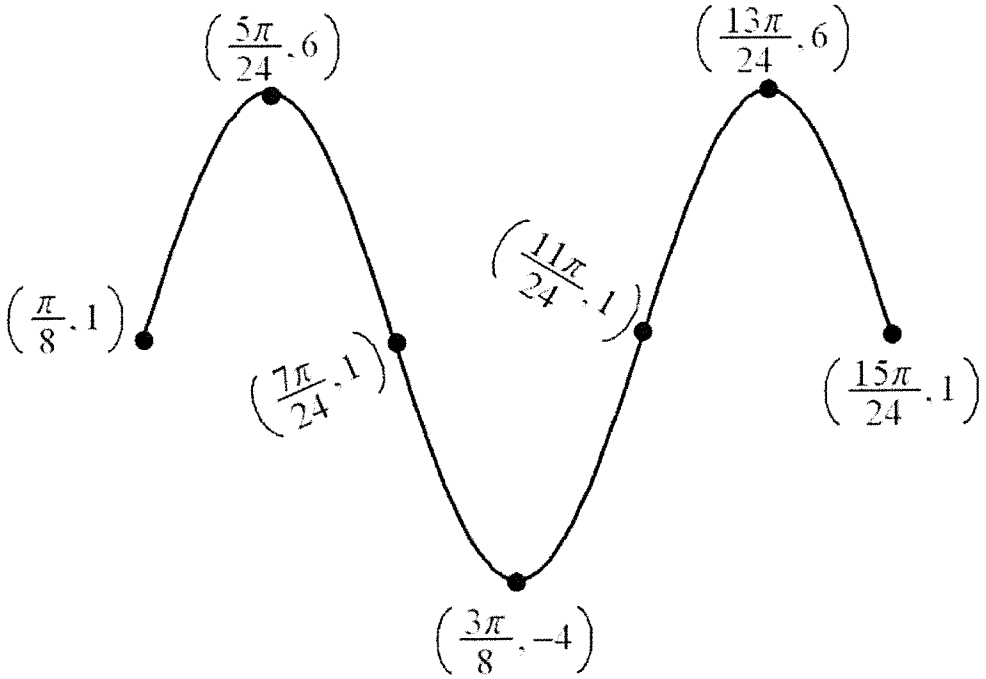
5. Write a Sine equation of this function. The window is 0 to 2π



6. Write a Cosine equation of this function. The window is 0 to 16π



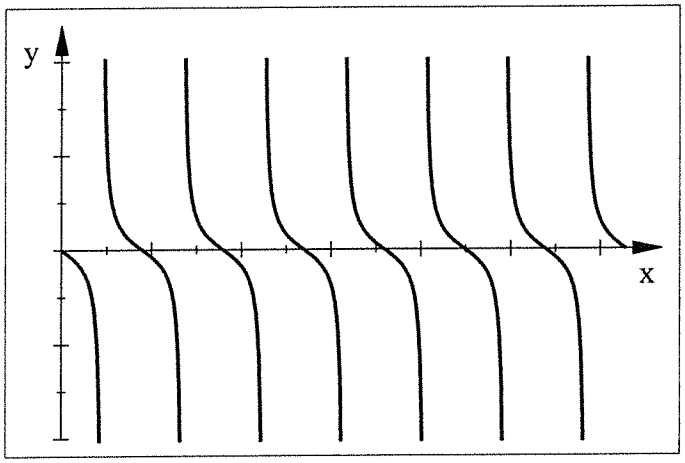
7. Write both a Sine and Cosine equation for this function.



8. Find both a positive and a negative coterminal angle for each given angle. Give the answer in the same form as the original angle.

a) $\theta = 875°$ b) $\theta = \frac{27\pi}{8}$

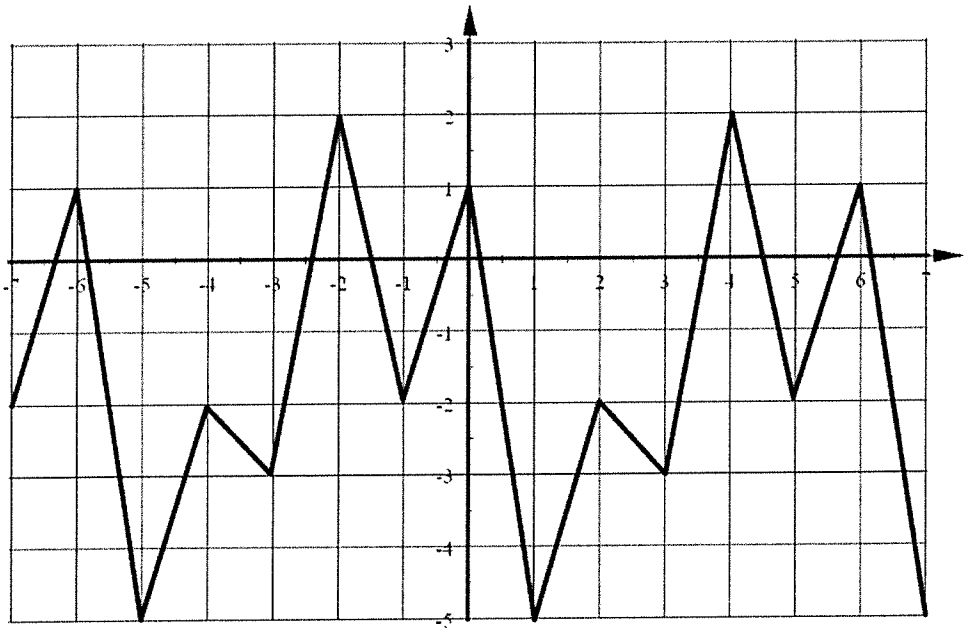
9. Write the equation for this Tangent Function. The Window is 0 to 2π



10. For the given Tangent Function state the Period, give 3 x-intercepts, and give 3 vertical asymptotes.

y =Tan$7x$

11. State the Amplitude, Period, and Equation of the Midline for this periodic function.



Algebra 2 Final Exam Review Ch 13 Spring 2015 Answers

1. a) $405°$ b) $510°$ 2. a) $\frac{13\pi}{3}$ b) $\frac{5\pi}{12}$

3. a) 1 b) 0 c) $-\sqrt{3}$ d) $-\frac{\sqrt{3}}{2}$ e) $-\frac{\sqrt{3}}{2}$

f) -1 g) -1 h) $\frac{\sqrt{3}}{3}$ i) $-\frac{\sqrt{2}}{2}$ j) -1

4. a) Amp = 9, Period = 3π, Midline: $y = -5$, Phase shift: $\frac{\pi}{6}$ left
   b) Amp = 2, Period = $\frac{2\pi}{7}$, Midline: $y = 8$, Phase shift: $\frac{3\pi}{4}$ right

5. $y = 2\sin 3x$ 6. $y = -7\cos\left(\frac{x}{4}\right)$

7. Possible answers are given:
Sine: $y = 5\text{Sin}6(x - \frac{\pi}{8}) + 1$ Starting Point $\left(\frac{\pi}{8}, 1\right)$
Cosine: $y = 5\text{Cos}6(x - \frac{5\pi}{24}) + 1$ Starting Point $\left(\frac{5\pi}{24}, 6\right)$

8. Possible answers are given:
a) Pos: $155°, 515°, 1235°, \ldots$ Neg: $-205°, -565°, \ldots$
b) Pos: $\frac{11\pi}{8}, \frac{43\pi}{8}, \ldots$ Neg: $-\frac{5\pi}{8}, -\frac{21\pi}{8}, \ldots$

9. $y = -\tan\left(\frac{7x}{2}\right)$

10. $Period = \frac{\pi}{7}$ $x - int = 0, \pm\frac{\pi}{7}, \pm\frac{2\pi}{7}, \pm\frac{3\pi}{7}$ $VA : x = \pm\frac{\pi}{14}, \pm\frac{3\pi}{14}, \pm\frac{5\pi}{14}$

11. Amplitude =3.5 Period=6 Midline: $y = -1.5$