

Name Key Date _____ Hour _____

Algebra 2 Trig G
Review for 3rd Quarter Cumulative

CHAPTER 8 REVIEW

1) Find the least common multiple of $8x^3y^5$ and $10x^4y$ $40x^4y^5$

2) Simplify completely:

$$\frac{x^2 + 2x - 15}{x - 3} \cdot \frac{\cancel{(x-3)}(x+5)}{\cancel{x-3}}$$
 $x+5$

3) Simplify completely:

$$\frac{2x+12}{x^2+16x+60} \cdot \frac{2(x+6)}{(x+6)(x+10)}$$
 $\frac{2}{x+10}$

4) Simplify completely:

$$\frac{4}{x^2+4x+3} \cdot \frac{x^2-4x-21}{x-7}$$

$$\frac{\cancel{(x+3)}(x+1)}{\cancel{(x+3)}(x+1)} \cdot \frac{\cancel{(x-7)}(x+3)}{\cancel{x-7}}$$
 $\frac{4}{x+1}$

5) Simplify completely:

$$\frac{x+5}{x-4} \cdot \frac{x^2+6x+5}{x-4}$$

$$\frac{\cancel{x+5}}{\cancel{x-4}} \cdot \frac{\cancel{(x+5)}(x+1)}{\cancel{(x+5)}(x+1)}$$
 $\frac{1}{x+1}$

6) Simplify completely:

$$\frac{ab}{6ab^4} \div \frac{8a^3b}{3a^2b^6} \cdot \frac{ab}{6ab^4} \cdot \frac{3a^2b^6}{8a^3b}$$

$$\frac{3a^3b^7}{48a^4b^5}$$
 $\frac{b^2}{16a}$

7) Simplify completely:

$$\frac{2x^3y^2}{5xy^3} \cdot \frac{15x^4y}{16x^2y^2} \cdot \frac{30x^2y^3}{80x^3y^5}$$
 $\frac{3x^4}{8y^2}$

8) Simplify completely:

$$\frac{(x+2)3}{(x+2)(x+5)} + \frac{5}{(x+5)(x+2)}$$

$$\frac{3x+6}{(x+2)(x+5)} + \frac{5}{(x+2)(x+5)} = \frac{3x+11}{(x+2)(x+5)}$$

9) Simplify completely:

$$\frac{(x-5)1}{(x-5)(x-4)} - \frac{2}{(x-4)(x-5)}$$

$$\frac{x-5-2}{(x-4)(x-5)} = \frac{x-7}{(x-4)(x-5)}$$

CHAPTER 9 REVIEW

1) Exponential Growth or Decay?

$$y = \frac{1}{2} \left(\frac{3}{2} \right)^x \quad \text{Growth}$$

2) Exponential Growth or Decay?

$$y = 7 \left(\frac{1}{4} \right)^x \quad \text{Decay}$$

3) Using a calculator, write the equation of an exponential function that passes through the given points. (1, 2.4) (3, 21.6) (4, 64.8)

$$y = .8(3)^x$$

4) Using a calculator, write the equation of an exponential function that passes through the given points. (0, 20) (1, 5) (2, 1.25)

$$y = 20(.25)^x$$

5) Write the equation in exponential form:

$$\log_{\frac{1}{2}} 32 = -5 \quad \left(\frac{1}{2} \right)^{-5} = 32$$

6) Write the equation in logarithmic form:

$$2 = (8)^{\frac{1}{3}} \quad \log_8 2 = \frac{1}{3}$$

7) Rewrite $\log 21$ using only $\log 7$ and $\log 3$

$$\log 7 + \log 3$$

8) Rewrite $\log \frac{3}{7}$ using only $\log 7$ and $\log 3$

$$\log 3 - \log 7$$

9) Rewrite $\log 49$ using only $\log 7$ and $\log 3$

$$\log 7^2 = 2 \cdot \log 7$$

10) Solve for x: $\log_4 x + \log_4 6 = \log_4 42$

$$\log_4 6x = \log_4 42$$

$$6x = 42$$

$$x = 7$$

11) $\log_3 2 + \log_3 4 + \log_3 3 = \log_3 x$

$$\log_3 24 = \log_3 x$$

$$24 = x$$

12) Solve for x: $2 \cdot \log_5 x = \log_5 49$

$$\log_5 x^2 = \log_5 49$$

$$x^2 = 49$$

$$x = 7$$

13) $\log_3 x + 2 \cdot \log_3 3 = \log_3 54$

$$\log_3 9x = \log_3 54$$

$$9x = 54$$

$$x = 6$$

14) Solve for x: $\log_2 15 - \log_2 x = \log_2 5$

$\log_2 \frac{15}{x} = \log_2 5$
 $\frac{15}{x} = 5$ $x = 3$

16) Solve for x: $\log_3(5x-7) = 5$

$3^5 = 5x-7$
 $243 = 5x-7$
 $250 = 5x$ $x = 50$

18) Evaluate: $\log_{11} 172$

$\frac{\log 172}{\log 11}$ 2.15

20) Solve for x: $5^{2x-3} = 67$

$\log 5^{2x-3} = \log 67$
 $(2x-3) \cdot \log 5 = \log 67$
 $2x-3 = 2.61$
 $2x = 5.61$ $x = 2.81$

* Switch to exp. form

15) Solve for x: $\log_5(10x+25) = 4$

$5^4 = 10x+25$
 $625 = 10x+25$
 $600 = 10x$ $x = 60$

17) Evaluate: $\log_6 325$

$\frac{\log 325}{\log 6}$ 3.23

19) Solve for x: $3^{x+2} = 31$

$\log 3^{x+2} = \log 31$
 $(x+2) \cdot \log 3 = \log 31$
 $x+2 = 3.13$
 $x = 1.13$

21) You have \$300 to invest. How long will it take you to earn \$1,200 if you invest at a rate of 6% interest compounded 6 times a year? Recall: $A = P\left(1 + \frac{r}{k}\right)^{kt}$

$1200 = 300\left(1 + \frac{0.06}{6}\right)^{6t}$
 $4 = (1.01)^{6t}$
 $\log 4 = 6t \cdot \log 1.01$
 $139.3214 = 6t$
 $23.22 = t$
years

22) In 1985, the population of Trigtown was 750 people. By 2005, the population was 6,000 people. What is the rate of growth over this 20 year period?

Recall: $y = ab^x$ (Round your "b" value to the nearest hundredth)

$6000 = 750(b)^{20}$
 $(8)^{\frac{1}{20}}(b^{20})^{\frac{1}{20}}$
 $1.11 = b$

23) There are 35 bacteria initially. The number of bacteria doubles every minute. How long will it take to have 86,000 bacteria? Recall: $y = ab^x$

$86000 = 35(2)^x$
 $2457.1429 = 2^x$
 $\log 2457.1429 = x \cdot \log 2$

$x = 11.26$ minutes

CHAPTER 13 REVIEW

Rewrite the radian measure in degrees, and the degree measure in radians.

1) a) $\frac{7\pi}{6} \cdot \frac{180}{\pi} = \boxed{210^\circ}$

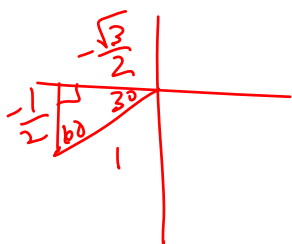
2) b) $120^\circ \cdot \frac{\pi}{180} = \boxed{\frac{2\pi}{3}}$

c) $\frac{5\pi}{4} \cdot \frac{180}{\pi} = \boxed{225^\circ}$

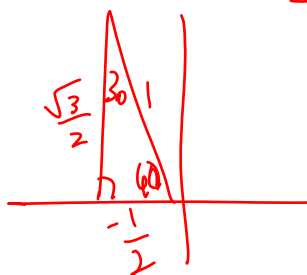
d) $495^\circ \cdot \frac{\pi}{180} = \boxed{\frac{11\pi}{4}}$

Find the exact value of each. Draw the triangle. (NO DECIMAL ANSWERS)

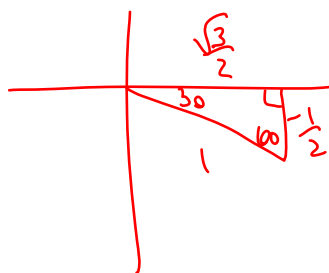
3) $\sin(210^\circ) = \boxed{-\frac{1}{2}}$



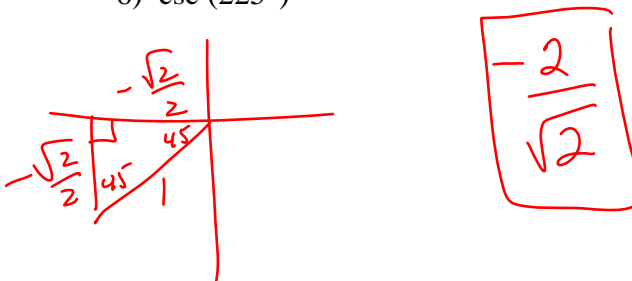
4) $\tan(120^\circ) = \frac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \boxed{-\sqrt{3}}$



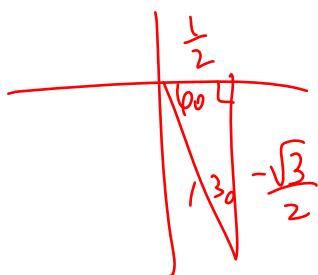
5) $\cos(-30^\circ) = \boxed{\frac{\sqrt{3}}{2}}$



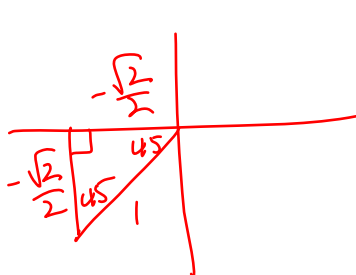
6) $\csc(225^\circ) = \frac{1}{\sin(225^\circ)} = \frac{1}{-\frac{\sqrt{2}}{2}} = \boxed{-\frac{2}{\sqrt{2}}}$



6) $\sin\left(-\frac{\pi}{3}\right) = \sin(-60^\circ) = \boxed{-\frac{\sqrt{3}}{2}}$

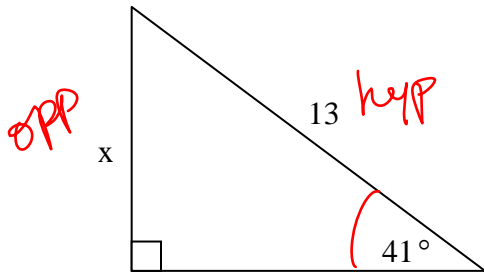


7) $\cot\left(-\frac{3\pi}{4}\right) = \cot(-135^\circ) = \frac{\cos(-135^\circ)}{\sin(-135^\circ)} = \frac{-\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} = \boxed{1}$



$\boxed{1}$

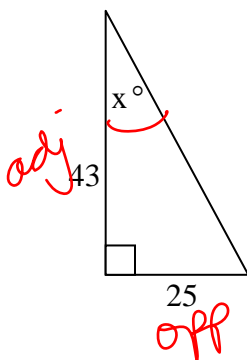
7) Find x.



$$\sin 41 = \frac{x}{13}$$

$$x = 8.53$$

8) Find x.

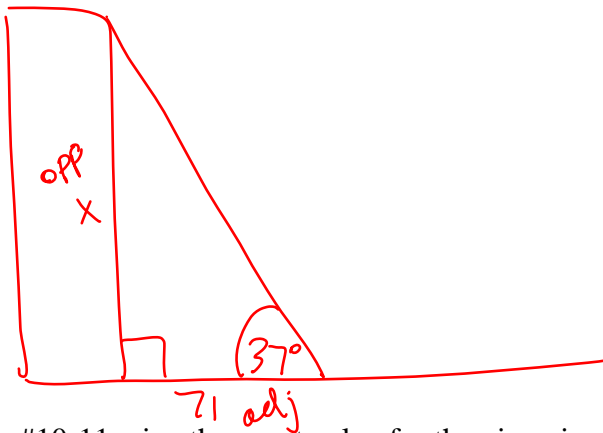


$$\tan x = \frac{25}{43}$$

$$\tan^{-1}\left(\frac{25}{43}\right) = x$$

$$x = 30^\circ$$

9) The angle of elevation from a point on the ground 71 feet away from a building to the top of the building is 37° . What is the height of the building? Draw a picture to illustrate the problem.



$$\tan 37 = \frac{x}{71}$$

$$x = 53.50 \text{ ft}$$

For #10-11, give the exact value for the given inverse trig functions. (Use your calculator! ☺)

10) $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$ 60°

11) $\cos^{-1}\left(\frac{-\sqrt{2}}{2}\right)$ 135°