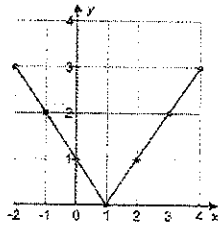
Unit 1 Review

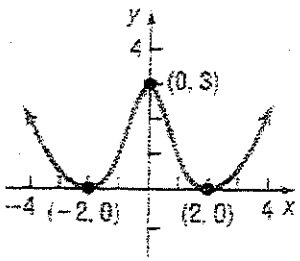
Name: _____

Identify the domain and range of the function. Unit 1 Days 1 & 2

1. 

D: [-2, 4]

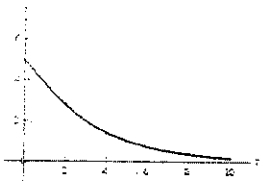
R: [0, 3]

2. 

D: $(-\infty, \infty)$

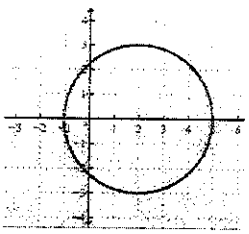
R: [0, 3]

3. Name a value that is in the domain, but is not in its range.



many 8

4. Name a value that is in the range, but is not in its domain.



many -2

5. Which transformation of $y = f(x)$ moves the graph 5 units to the right and 2 units up? Unit 1 Day 4

$y = a \cdot f(b(x \pm c)) \pm d$

$y = f(x-5) + 2$

6. Which transformation of $y = f(x)$ would expand vertically by a factor of 3, reflect across the x-axis, and translate 4 units left and 6 units down?

$y = -3 \cdot f(x+4) - 6$

Find the inverse for the following: Unit 1 Day 5

7. $y = 3x + 1$

$x = 3y + 1$

$x - 1 = 3y$

$y^{-1} = \frac{x-1}{3}$

8. $y = \sqrt{-3x+1}$

$x = \sqrt{-3y+1}$

$x^2 = -3y + 1$

$x^2 - 1 = -3y$

$y^{-1} = \frac{x^2-1}{-3}$

9. $y = (x-4)^4$

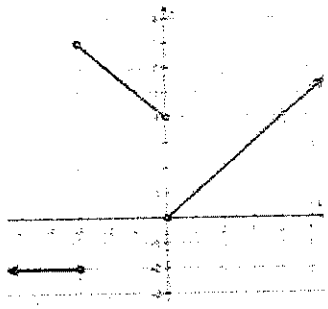
$x = (y-4)^4$

$\sqrt[4]{x} = y - 4$

$y^{-1} = \sqrt[4]{x} + 4$

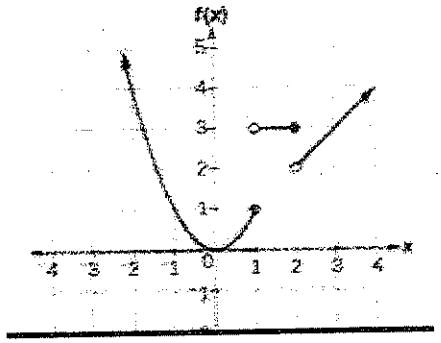
Write a piecewise function from the following graphs. Unit 1 Day 6

10.



$$f(x) = \begin{cases} -2, & x \le -3 \\ -x+4, & -3 < x < 0 \\ x, & x \ge 0 \end{cases}$$

11.



$$f(x) = \begin{cases} x^2, & x \le 1 \\ 3, & 1 < x \le 2 \\ x, & x > 2 \end{cases}$$

12. Find $f(-6)$ for the given piecewise function: fits here

$$f(x) = \begin{cases} x^2 + 1, & x \le -1 \\ x + 4, & -1 < x < 2 \\ 5, & x \ge 2 \end{cases}$$

$f(-6) = (-6)^2 + 1 = 37$

13. Find the function values for the given piecewise function:

$$f(x) = \begin{cases} x^2, & x < 0 \\ 2, & 0 \le x \le 3 \\ 4 - x, & x > 3 \end{cases}$$

$f(-8)$ $(-8)^2 = 64$

$f(1.75)$ 2

$f(17)$ $4 - 17 = -13$

Review Name: _____

Simplify each expression. There should only be positive exponents in your answer. Unit 2 Days 1 & 2

1. $(256a^{20}b^{-4}c^{0})^{\frac{1}{4}}$

$\frac{4a^5}{b}$

2. $\frac{10x^3y^{-3}z^{-5}}{2x^7y^{-5}}$

$\frac{5y^2}{x^4z^5}$

3. $\frac{6x^{-7}y^{-1}}{18y^{-3}}$

$\frac{y^2}{3x^7}$

Evaluate each logarithm.

4. $\log_3 27$

3

5. $\log_2 128$

7

6. $\log_4(\frac{1}{256})$

-4

$\log_{BASE} X = EXPONENT$

Write the following in logarithmic form.

7. $3^2 = 9$

$\log_3 9 = 2$

8. $7^3 = 343$

$\log_7 343 = 3$

9. $6^{-2} = \frac{1}{36}$

$\log_6(\frac{1}{36}) = -2$

10. **A town's population increases at a rate of 3% each year. The town's population was 17,000 in the year 2005. What will the town's population be in the year 2025? Round to the nearest whole number.**

$y = a(1 \pm r)^t$ $y = 17000(1 + .03)^{20}$

$= 30,703.89 = 30,704$

11. **You recently purchased a vehicle for $12,500. The vehicle will depreciate at a rate of 10.5% per year. What will the value of the car be after 5 years? Round to the nearest cents.**

$y = 12,500(1 - .105)^5$

$= 7,178.36$

Expand the following logarithms. Unit 2 Day 4

12. $\log 3x^4$

$\log 3 + 4\log x$

13. $\log_5(\frac{y}{3})$

$\log_5 y - \log_5 3$

14. $\log_2(\frac{5x^2}{y^3})$

$\log_2 5 + 2\log_2 x - 3\log_2 y$

Condense the following logarithms. Unit 2 Days 5 & 6

15. $4\log x + \frac{1}{2}\log y$

$\log x^4\sqrt{y}$

16. $2\log x - \log y$

$\log \frac{x^2}{y}$

17. $3\log_7 x + \frac{1}{2}\log_7 y - 5\log_7 z$

$\log_7 \frac{x^3\sqrt{y}}{z^5}$

Solve the following logarithmic equations. Round to the nearest ten-thousandth.

18. $\log(3x+1) = 2$

$10^2 = 3x+1$

$99 = 3x$

$33 = x$

19. $2\log(x+1) = 5$

$\log(x+1) = 2.5$

$10^{2.5} = x+1$

$10^{2.5} - 1 = x$

$x = 315.2278$

20. $4\log_3(2x) = 30$

$\log_3(2x) = 7.5$

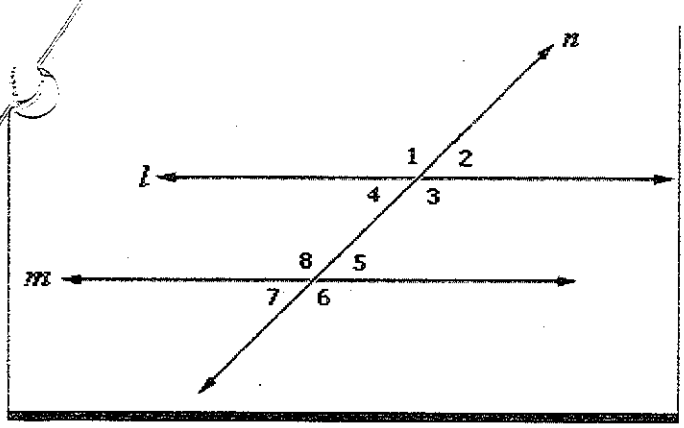
$3^{7.5} = 2x$

$\frac{3^{7.5}}{2} = x$

$x = 1893.9996$

Review

Name: _____



1. **Name a pair of angles that are alternate interior angles.**

   4 & 5 or 3 & 8

2. **Name a pair of angles that are alternate exterior angles.**

   1 & 6 or 2 & 7

3. **Name a pair of angles that are corresponding.**

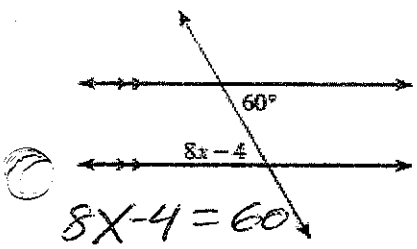
   1 & 8, 4 & 7, 2 & 5, or 3 & 6

4. **Name a pair of angles that are supplementary.**

   MANY 1 & 2, 7 & 8, ...

Solve for x.

5.

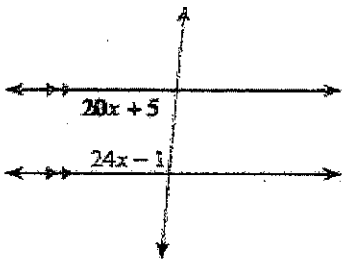


$8x - 4 = 60$

$8x = 64$

$x = 8$

6.

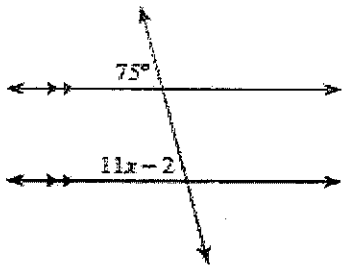


$44x + 4 = 180$

$44x = 176$

$x = 4$

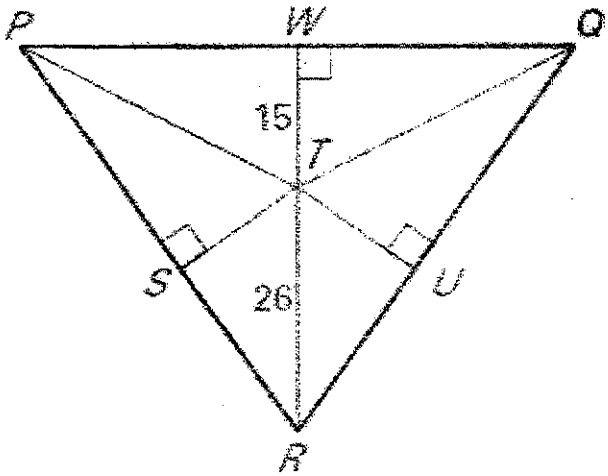
7.



$11x - 2 = 75$

$11x = 77$

$x = 7$



Point T is the incenter of ΔPQR.

8. **If point T is the incenter, then point T is the point of concurrency of the** ANGLE BISECTORS

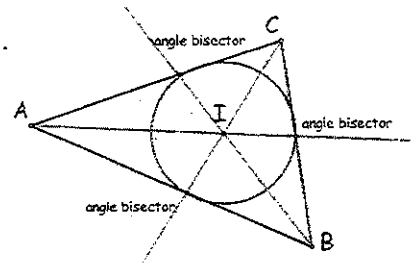
9. **ST =** 15. EQUIDISTANT TO SIDES.

10. **If TU = (2x – 1), find x.** $2x - 1 = 15$, $x = 8$

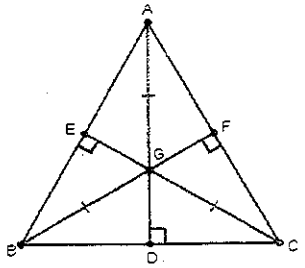
11. **If** $m\angle PRT = 24°$, **then** $m\angle QRT =$ 24°.

12. **If** $m\angle RPQ = 62°$, **then** $m\angle RPT =$ 31°.

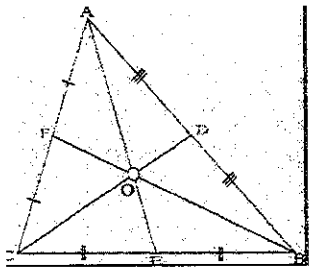
Name the point of concurrency for each triangle. perpendicular bisectors MEDIAN

13. 

INCENTER

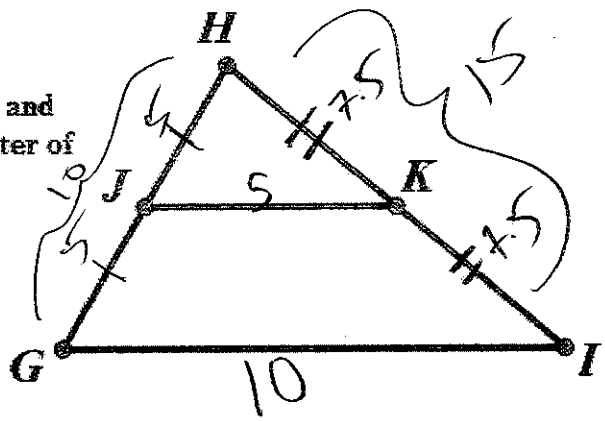
14. 

CIRCUMCENTER

15. 

CENTROID

$\overline{JK}$ **is the midsegment of** $\triangle GHI$. $JK = 5$, $GH = 10$ **and** $IH = 15$. **Find the perimeter of each triangle.**



16. $\triangle JKH$ 17.5

17. $\triangle GIH$ 35

Find the length of each segment in simplest radical form.

18. (-2, 3), (-7, -7)

$\sqrt{125}$

$5\sqrt{5}$

19. (-10, -7), (-8, 1)

$\sqrt{68}$

$2\sqrt{17}$

20. (1, 5), (2, -2)

$\sqrt{50}$

$5\sqrt{2}$

Review

Name: _____

Simplify. Assume x > 0.

1. $\sqrt{3x^2+13x^2}$

$= \sqrt{16x^2}$

$= 4x$

2. $\sqrt{8x^2+12x^2}$

$= \sqrt{20x^2}$

$= 2x\sqrt{5}$

3. $\sqrt{17x^2+55x^2}$

$= \sqrt{72x^2}$

$= 6x\sqrt{2}$

Which expression is equivalent to the following.

4. i^{23}

$-i$

5. i^{37}

i

6. i^{62}

-1

7. **What is the sum of** $5x^2-3$ **and** $2x^2-3x^3$**?**

$5x^2-3 + 2x^2-3x^3$

$= -3x^3+7x^2-3$

8. **What is** $(3x^4-3x)$ **minus** $(3x-3x^4)$**?**

$(3x^4-3x)-(3x-3x^4)$

$= 6x^4-6x$

9. **What is** $-6x^4-3x-8x^5$ **subtracted from** $3-6x^5-8x^4$**?**

$(-6x^5-8x^4+3)-(-8x^5-6x^4-3x)$

$2x^5-2x^4+3x+3$

Factor completely.

10. $2x^2 - 8x - 42$

$2(x^2-4x-21)$

$2(x-7)(x+3)$

11. $5x^2 - 45x + 90$

$5(x^2-9x+18)$

$5(x-6)(x-3)$

12. $3x^2 - 9x - 12$

$3(x^2-3x-4)$

$3(x-4)(x+1)$

Find the zeros.

13. $f(x) = x^4 - 7x^2 + 12$

$0 = (x^2-4)(x^2-3)$

$0 = (x+2)(x-2)(x^2-3)$

$\{\pm 2, \pm\sqrt{3}\}$

14. $f(x) = x^3 - 2x^2 - 3x + 6$

$0 = x^2(x-2) - 3(x-2)$

$0 = (x^2-3)(x-2)$

$\{\pm\sqrt{3}, 2\}$

15. $f(x) = x^4 - 2x^3 - 4x^2 + 8x$

$0 = x[x^3-2x^2-4(x+8)]$

$0 = x[x^2(x-2) - 4(x-2)]$

$0 = x(x^2-4)(x-2)$

$0 = x(x+2)(x-2)(x-2)$

$\{0, -2, 2, 2\}$

Find the roots.

16. $x^4 + 2x^2 - 15 = 0$

$(x^2+5)(x^2-3)=0$

$\{\pm i\sqrt{5}, \pm\sqrt{3}\}$

17. $x^3 + 3x^2 + 4x + 12 = 0$

$x^2(x+3) + 4(x+3) = 0$

$(x^2+4)(x+3)=0$

$\{\pm 2i, -3\}$

18. $x^4 + 6x^2 = 16$

$x^4+6x^2-16=0$

$(x^2+8)(x^2-2)=0$

$\{\pm 2i\sqrt{2}, \pm\sqrt{2}\}$

Review

Name: _____

Find the product or quotient.

1. $\frac{1}{v+10} \cdot \frac{10v+30}{v+3}$

$\frac{10(v+3)}{(v+10)(v+3)}$

$\frac{10}{v+10}$

2. $\frac{x^2+10x+16}{x^2+6x+8} \div \frac{1}{x+4}$

$\frac{(x+8)(x+2)}{(x+4)(x+2)} \cdot \frac{(x+4)}{1}$

$x+8$

3. $\frac{x}{x+5} \div \frac{3x}{x^2-25}$

$\frac{x}{x+5} \cdot \frac{(x+5)(x-5)}{3x}$

$\frac{x-5}{3}$

Find the sum or difference.

4. $\frac{5}{9x} + \frac{y}{3x^2}$

LCD $9x^2$

$\frac{5x}{9x^2} + \frac{3y}{9x^2}$

$\frac{5x+3y}{9x^2}$

5. $\frac{2}{6x} - \frac{y}{4x^2}$

LCD $12x^2$

$\frac{4x}{12x^2} - \frac{3y}{12x^2}$

$\frac{4x-3y}{12x^2}$

6. $\frac{9}{x-4} + \frac{x+7}{x^2-16}$

LCD $(x+4)(x-4)$

$\frac{9x+36}{(x+4)(x-4)} + \frac{x+7}{(x+4)(x-4)}$

$\frac{10x+43}{(x+4)(x-4)}$

7. $\frac{8}{x-6} - \frac{x+6}{x^2-36}$

LCD $(x+6)(x-6)$

$\frac{8x+48}{(x+6)(x-6)} - \frac{x+6}{(x+6)(x-6)}$

$\frac{7x+42}{(x+6)(x-6)} = \frac{7(x+6)}{(x+6)(x-6)}$

$\frac{7}{x-6}$

EASIER WAY

$\frac{8}{x-6} - \frac{x+6}{(x+6)(x-6)} = \frac{8}{x-6} - \frac{1}{x-6} = \frac{7}{x-6}$