Algebra 2 Honors - Spiral Assignment #3 **Name:**_____

Print out this worksheet and show all of your work in the box for each question. Highlight your answers. Use a calculator ONLY where indicated.

1.

Write as the sum and/or difference of logarithms.

$$\log_5\left(\frac{x^5}{y^6}\right)$$

A) $6\log_5 y - 5\log_5 x$

B) $5\log_5 x - 6\log_5 y$

C) $5\log_5 x + 6\log_5 y$

D) $\frac{5}{6}\log_5\left(\frac{x}{y}\right)$

2.

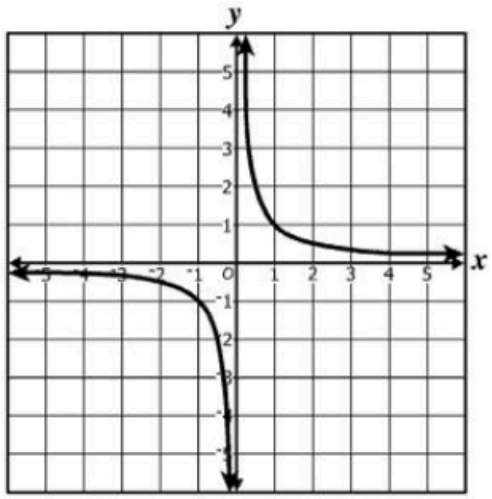
Simplify completely: $\sqrt[4]{162x^6y^7}$

3.

Factor: $8x^2 - 18xy - 5y^2$

4.

The graph of a parent function is shown.



Which function belongs to this same family?

- A $g(x) = -\log(x-1)$
- B $g(x) = \left(\frac{1}{3}\right)^{(x-1)}$
- C $g(x) = 3^{(x-1)}$
- D $g(x) = \frac{3}{x-1}$

5.

Solve the equation: $4^{2x+1} = 1024$

6. Find the zeros: $f(x) = \log_3 x + \log_3(x+5) - \log_3 6$

7.

Which is equivalent to $(6+\sqrt{7})(5+\sqrt{7})$?

A $11+2\sqrt{7}$

B $30+11\sqrt{7}$

C $30+18\sqrt{7}$

D $37+11\sqrt{7}$

8.

Find the inverse function of $f(x) = \dfrac{3x-2}{x+5}$

9.

Perform the indicated operation and simplify answer. $\dfrac{\frac{x}{3}+\frac{1}{6}}{\frac{1}{2}+\frac{1}{3}}$

A. $\dfrac{10x+5}{36}$ B. $\dfrac{12}{x}$ C. $\dfrac{2x+1}{5}$ D. $\dfrac{x+1}{6}$

10.

If $f(x) = \frac{2}{3}x^2 + 1$ and $g(x) = 6x - 15$, which polynomial is equivalent to $g(f(x))$?

- **A** $4x^2 - 13$
- **B** $4x^2 - 9$
- **C** $4x^3 - 10x^2 + 6x - 15$
- **D** $16x^2 - 80x + 101$

11.

Find the vertex of the parabola $f(x) = -4x^2 + 40x - 93$

a.) (5, 7) b.) (4, 10) c.) (- 3, 4) d.) (- 3, -6) e.) (-5, 7)

12.

. Find the range of $f(x) = -3 - 7e^{4/9-5x}$

(A) $(-\infty, -3]$ (B) $(-\infty, -3)$ (C) $[-3, \infty)$ (D) $(-3, \infty)$ (E) all real numbers

13. ***Calculator***

If $2000 is invested at 6% compounded quarterly for 3 years, how much will it be worth at the end of that time?

a.) $2543.65 b.) $2391.24 c.) $2988.45 d.) $3000 e.) $2655.88

14. ***Calculator***

What principal invested at 8% compounded continuously for 4 years will yield $1190? Round the answer to two decimal places.

A) $1188.62 B) $864.12 C) $1638.78 D) $627.48