

Name: \_\_\_\_\_

**This assignment is for students who have completed Algebra II Honors or on-level, but are taking Advanced Math Dual Enrollment (a.k.a the HONORS course for Advanced Math) in the 2018-2019 school year.**

**Did you read the instructions?**

**What math class are you taking next year?**

1. Solve:  $|2w - 1| + 6 = 12$

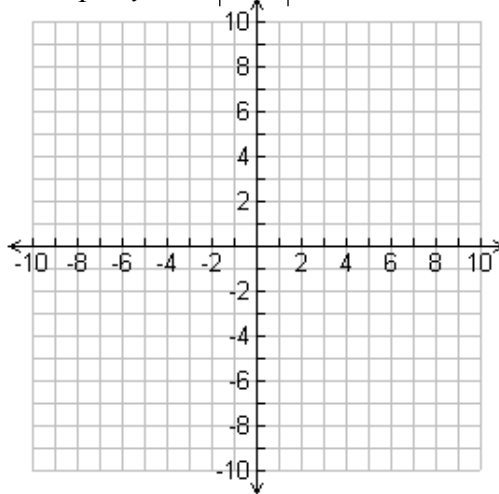
2. Factor completely:  $3x^4 - 3$

3. Factor completely:  $3x^4y + 24xy$

4. Solve:  $x^2 + 2x + 10 = 0$

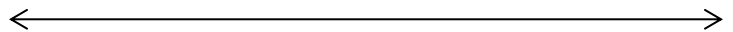
5. Solve:  $4x^2 - 28x = 32$

6. Graph:  $y = -3|x - 2|$

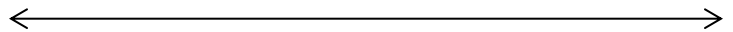


7. Write the quadratic function in vertex form:  $y = 2x^2 - 12x + 7$

8. Solve and graph:  $7x + 1 < 10x - 5$  and  $10x - 6 \leq 8x + 12$



9. Solve and graph:  $|3 + 8x| + 4 \geq 39$

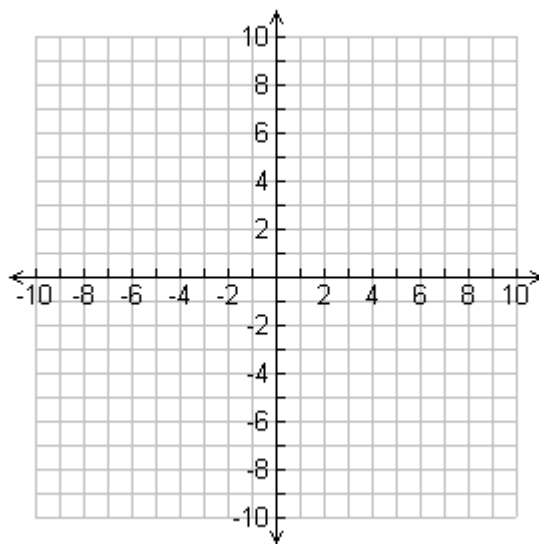


10. What are the x-intercepts of  $y = 3x^2 - 11x - 4$

11. What is the axis of symmetry of  $y = -3x^2 - 11x - 4$

Graph each of the following and give the indicated information. (6pts each; 2pts graph, 1pt vertex, 1pt Domain/Range, 1pt AOS, 1pt y-intercept)

12.  $y = \frac{1}{2}x^2 + 3$



Vertex: \_\_\_\_\_

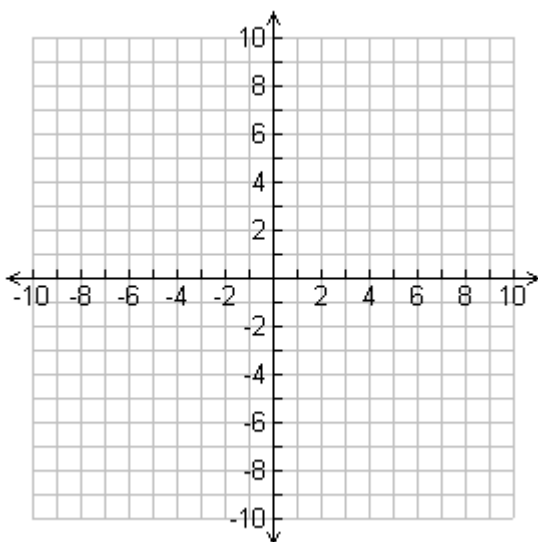
Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

y-intercept: \_\_\_\_\_

13.  $y = \frac{3}{2}|x-3| + 4$



Vertex: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

y-intercept: \_\_\_\_\_

14. Give the number and type of solutions (2 points):  $-7x^2 + 6x - 1 = 0$

15. Solve  $-3(2x-5)^{\frac{3}{2}} + 4 = -188$

16. Solve  $\log_7(3x+4) - \log_7(2x+1) = 2$

**Solve using system of equations: (4 points)**

17. A school is selling tickets to the annual talent show. On the first day of ticket sales the school sold 1 senior citizen ticket and 2 student tickets for a total of \$20. The school took in \$119 on the second day by selling 7 senior citizen tickets and 11 student tickets. What is the price each of one senior citizen ticket and one student ticket?

18. A bacteria culture doubles every hour.

a) If you started out with a sample of 500 bacteria, how many bacteria would be present in 7 hours?

b) When would you have a count of 5,000,000? Round to one decimal place.

19. Solve:  $\frac{2x^2 - 2x}{3x^3 - 3x} + \frac{2x - 5}{x + 1} = \frac{2x + 1}{3x}$

20. Simplify, note any restrictions on variable :  $\frac{2x}{x^3 - 36x} + \frac{x + 4}{x + 6}$

21. Solve:  $25^{2x} = \left(\frac{1}{5}\right)^{x-12}$

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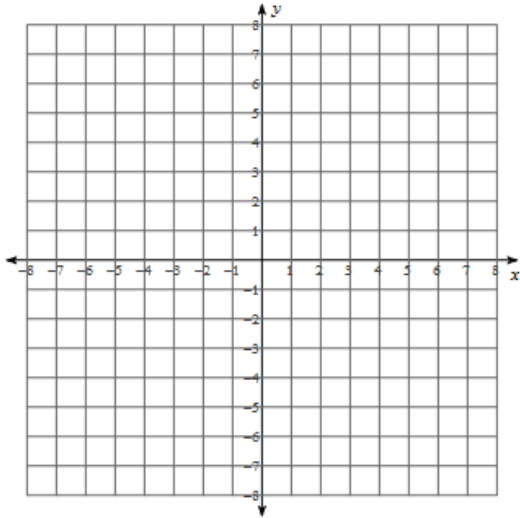
22. You invest \$14,500 in an account that pays interest at 3.5% compounded quarterly.

a) What would the account be worth in 5 years?

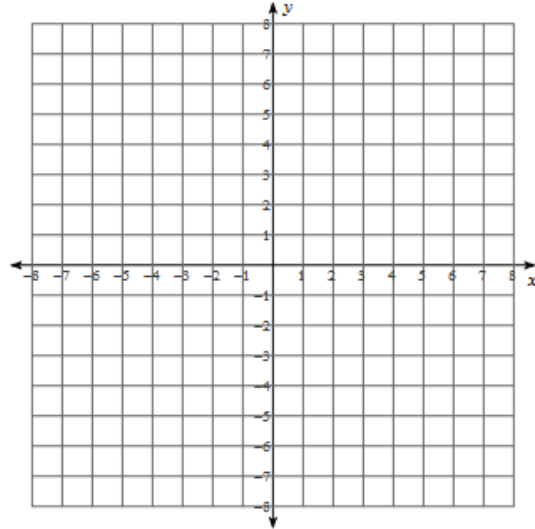
b) If you were offered 3.25% compounded continuously, would you take the offer? Explain and show work.

Graph the following functions on the coordinate planes provided. Label VIP and asymptote.

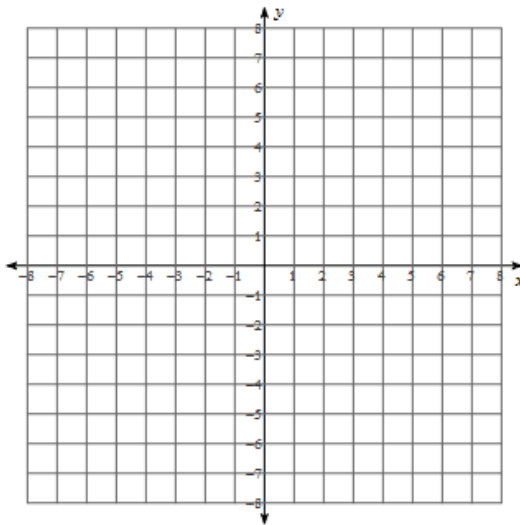
23.  $y = 2 \cdot \frac{2}{3}^{(x-1)} - 3$



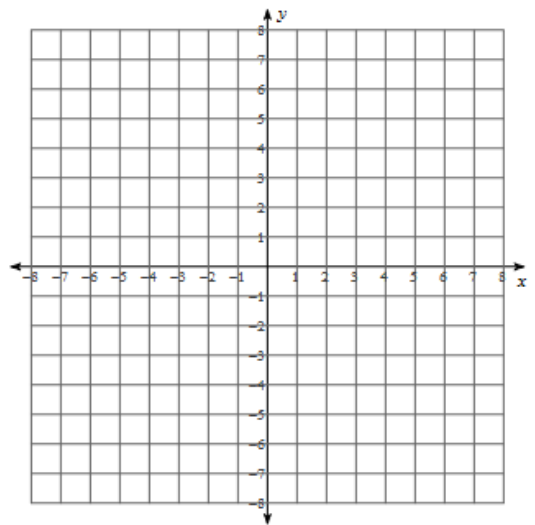
24.  $y = 6 \log_3(x-2) + 3$



25.  $y = -3\sqrt{x+2} + 1$



26.  $y = x^3 - 2$



27. Expand:  $\log_{17}\left(\frac{3x^3y^7}{2z^4\sqrt{a}}\right)$

28. Simplify:  $\frac{3x^3y\sqrt{24x^5}}{2\sqrt{18x^3}}$

