

Are you ready for College Algebra?

Name: _____

Complete your work neatly on a separate sheet of paper. Make sure that you show your work and can explain how you arrived at your solution.

Given $f(x) = x^2 + 3x + 9$, find:

1. $f(-2)$

2. $f(2h)$

3. Use the rational function $f(x) = \frac{x^2 + x - 8}{x + 2}$. Find the solution(s) when $f(x) = 2$.

Solve for x , round to nearest tenth when the answer is not a whole number:

4. $\frac{2}{7}x + 6 = 10$

5. $2x^2 - 11x - 21 = 0$

6. $x^2 - 6x + 1 = 0$

7. $x^3 - 2x^2 + x = 0$

8. $\log x + \log(x + 15) = 2$

9. $\ln(x - 2) + \ln(2x - 3) = 2 \ln x$

10. What happens to the function $g(x) = \left(1 + \frac{1}{x}\right)^x$ as $x \rightarrow \infty$?

11. What is the domain of the function $h(x) = \frac{3}{x - 2}$? What is the range of the function?

12. Identify the domain of the function $f(x) = \frac{x^2 + 3x + 2}{x - 4}$.

13. Identify the asymptotes of $f(x) = \frac{x + 2}{x - 1}$.

14. Write an equation for the linear function that passes through the points $f(1) = 2$ and $f(-4) = -13$.

15. If $g(x) = \sqrt{x}$ and $h(x) = x^3 - 1$, what is $g(h(4))$? What is $h(g(x))$?

16. Let $f(x) = (x - 3)^2(x - 5)(x + 2)$. Identify all zeros and the multiplicity of each zero.

17. Find the inverse of the function $y = 2x^5 - 3$.

18. Solve the system of equations:
$$\begin{aligned} 4x - 3y &= -7 \\ 3x - y &= 1 \end{aligned}$$

19. Find the value of an investment of \$5525 for five years at an interest rate of 8%, if the interest is compounded continuously.

20. Match each equation to a graph without the aide of a calculator.

a. $y = \sqrt{9 - x^2}$

b. $y = |x| - 3$

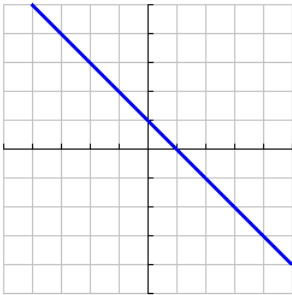
c. $2\sqrt{x}$

d. $y = 1 - x$

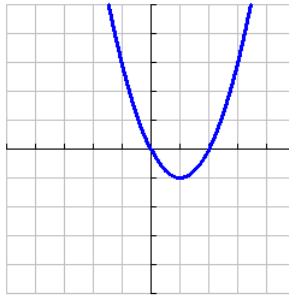
e. $y = x^2 - 2x$

f. $y = x^3 - x + 1$

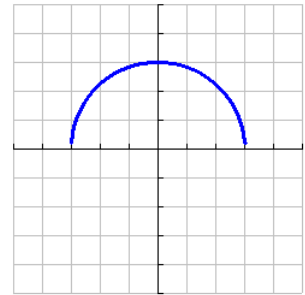
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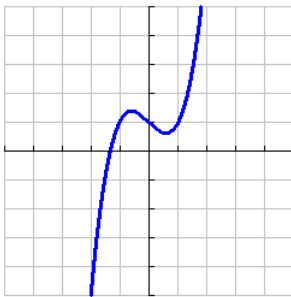
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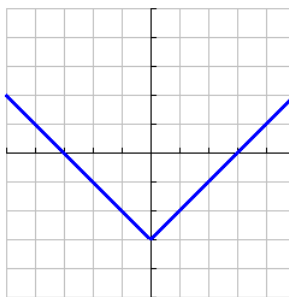
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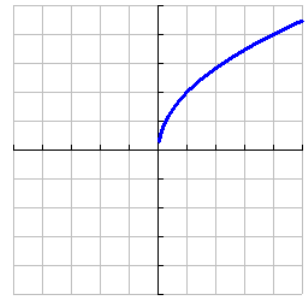
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5



6



Factor:

21. $2x^2 - x - 3$

22. $x^2 - 16$

23. $4x^2 + 12x + 9$

Simplify each radical expression without using a calculator (Example: $\sqrt{40} = 2\sqrt{10}$)

24. $\sqrt{150}$

25. $\sqrt[3]{80x^6y^4}$

26. $\sqrt{x^2}$

27. Explain what effect the parameters a , b , h , and k have when applied to the graph of $y = f(x)$ to become $y = a \cdot f(b(x-h)) + k$.

For each quadratic equation, find the vertex, the axis of symmetry, and the intercepts.

28. $f(x) = 2x^2 - 5x - 12$

29. $g(x) = -3(x+2)^2 + 4$

30. Are you ready for this course?