

Exponent Rule:

$$x^0 = 1$$

$$x^1 = x$$

$$x^{-n} = \frac{1}{x^n}$$

$$x^a \cdot x^b = x^{a+b}$$

$$\frac{x^a}{x^b} = x^{a-b}$$

$$(x^a)^b = x^{ab}$$

$$(ab)^n = a^n b^n$$

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$x^{\frac{1}{n}} = \sqrt[n]{x}$$

Logarithm Rule:

$$\log_x 1 = 0$$

$$\log_x x = 1$$

$$\log_x \frac{1}{x^n} = -n$$

$$\log_x a + \log_x b = \log_x (ab)$$

$$\log_x a - \log_x b = \log_x \left(\frac{a}{b}\right)$$

$$\log_x a^b = b \log_x a$$

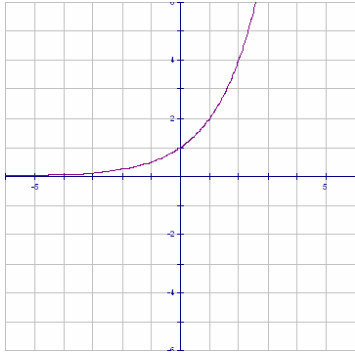
$$\log_x \sqrt[n]{x} = \frac{1}{n}$$

1. Rewrite in exponential form: $\log 40 = 1.6$ _____

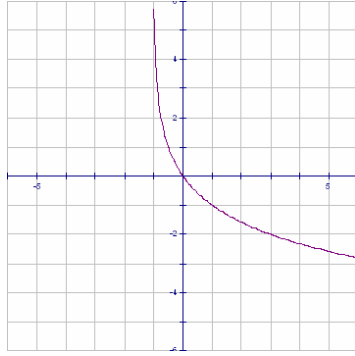
2. Rewrite in exponential form: $\log_2 x = 4$ _____

3. Rewrite in logarithmic form: $4^x = 1025$ _____

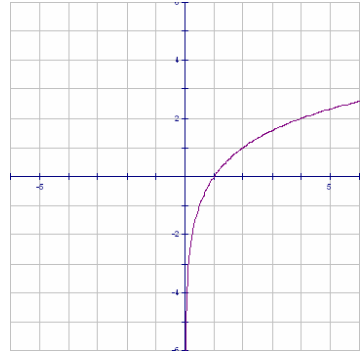
Match the graphs to the equations below.



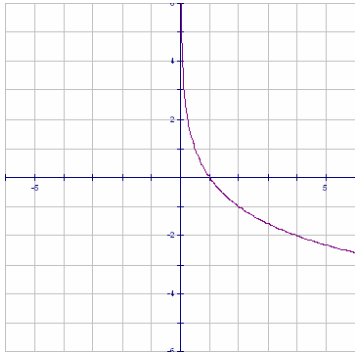
4. _____



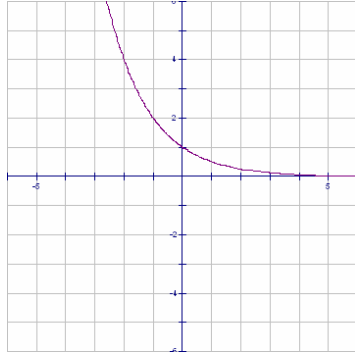
5. _____



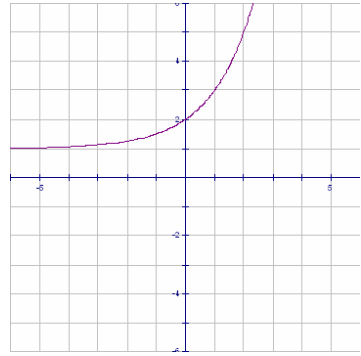
6. _____



7. _____



8. _____



9. _____

A. $y = 2^x$

B. $y = 2^{-x}$

C. $y = 2^x + 1$

D. $y = \log_2 x$

E. $y = -\log_2 x$

F. $y = -\log_2(x+1)$

Solve:

10. $32^{\frac{2}{5}} =$ _____

11. $81^{0.75} =$ _____

12. $\log_5\left(\frac{1}{125}\right) =$ _____

13. $\left(\frac{x^2y}{z^9}\right)^3 =$ _____

14. $\left(\frac{3x^4y^{-2}}{2x^{-1}y^{-4}}\right)^2 =$ _____

15. $(8x^6)^{\frac{4}{3}} =$ _____

Use the following information for the next five problems:

$$\log_n 2 = 2.5$$

$$\log_n 3 = 3.9624$$

$$\log_n 5 = 5.8048$$

16. $\log_n 6 =$ _____

17. $\log_n 10 =$ _____

18. $\log_n 4 =$ _____

19. $\log_2 5 =$ _____
(express this as a fraction)

20. $\log_n \left(\frac{2\sqrt{5}}{3} \right) =$ _____

Match the column on the left with the column on the right:

21. _____ $(2\sqrt{x})^4$

A. $16\sqrt[8]{x^3}$

22. _____ $\frac{x^{-2}\sqrt{8}}{2^{-1.5}x^{-4}}$

B. $\frac{8}{x^2}$

23. _____ $(8x^2)^{\frac{4}{3}}$

C. $16\sqrt[3]{x^8}$

24. _____ $2\left(\frac{1}{4x^{0.25}}\right)^{-1.5}$

D. $16x^2$

25. _____ $\left(\frac{4}{x}\right)^2$

E. $8x^2$

26. _____ $\frac{2\sqrt{x}\log_2 16}{x^{2.5}}$

F. $16x^{-2}$

27. Solve for x : $2\log x = \log(8x - 15)$

28. Solve for x : $2\log x = \log 4 + \log(x - 1)$