

Homework assignment

Name: _____

1. What is the logarithmic form of $81^{\frac{3}{4}} = 27$?

- (A) $\log_{\frac{3}{4}}(27) = 81$
 - (B) $\log_{27}\left(\frac{3}{4}\right) = 81$
 - (C) $\log_{27}(81) = \frac{3}{4}$
 - (D) $\log_{81}(27) = \frac{3}{4}$
- $\log_{81} 27 = \frac{3}{4}$

2. What is the exact value of x for $(1.3)^x = 28$?

- (A) $\frac{\log 1.3}{\log 28}$
 - (B) $\log\left(\frac{1.3}{28}\right)$
 - (C) $\frac{\log 28}{\log 1.3}$
 - (D) $\log\left(\frac{28}{1.3}\right)$
- $x \log 1.3 = \log 28$
 $x = \frac{\log 28}{\log 1.3}$

3. What is the simplified form of $2\log_a 5 + \log_a 6 - \frac{1}{3}\log_a 8$?

- (A) $\log_a 29$
 - (B) $\log_a 30$
 - (C) $\log_a 75$
 - (D) $2\log_a 15$
- $\log\left(\frac{5^2 \cdot 6}{2}\right)$

4. What is the value of x for $\log_2 5 + \log_2 x = 3$?

- (A) 1
 - (B) $\frac{6}{5}$
 - (C) $\frac{8}{5}$
 - (D) 3
- $\log_2 5x = 3$
 $2^3 = 5x$

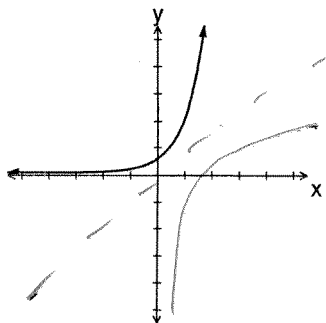
5. Write as a single logarithm: $4\log A - \log B^3 + 2\log C$.

- (A) $\log(A^4 B^3 C^2)$
 - (B) $\log\left(\frac{A^4 C^2}{B^3}\right)$
 - (C) $\frac{\log A^4 C^2}{\log B^3}$
 - (D) $8\log\left(\frac{AC}{B^3}\right)$
- $\log\left(\frac{A^4 C^2}{B^3}\right)$

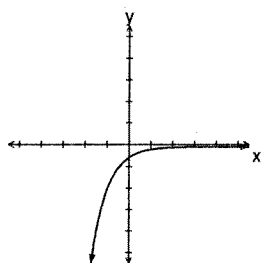
6. Solve for x : $2\log_2 x + \log_2 4 = \log_2 64$.

- (A) 4
 - (B) ± 4
 - (C) 16
 - (D) ± 16
- $\log_2 4x^2 = \log_2 64$
 $4x^2 = 64$
 $x^2 = 16$
 $x = \pm 4$
- $x = -4$ doesn't work

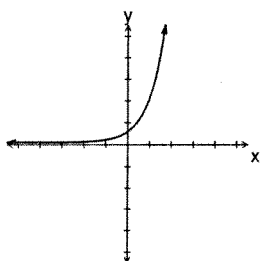
7. Which represents the inverse of the graph of $f(x)$ shown below?



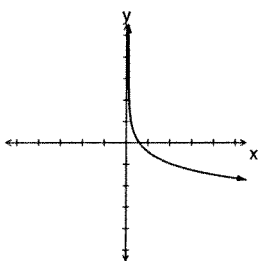
(A)



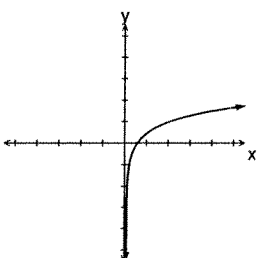
(B)



(C)



(D)



Solve for x.

8. $\log_4(x+4) + \log_4 x = \log_4 21.$

$$(x+4)(x) = 21$$

$$x^2 + 4x - 21 = 0$$

$$(x+7)(x-3) = 0$$

$$x = -7 \text{ or } \boxed{x = 3}$$

9. $\log_3(2x-1) - \log_3(x-4) = 2.$

$$\log_3 \frac{2x-1}{x-4} = 2$$

$$3^2 = \frac{2x-1}{x-4}$$

$$9x - 36 = 2x - 1$$

10. $\frac{1}{3} \log_2 125 + \log_2(x+2) = 4.$

$$\log_2(5x+10) = 4$$

$$2^4 = 5x+10$$

$$16 = 5x+10$$

$$6 = 5x$$

$$x = \frac{6}{5}$$

$$7x = 35$$

$$\boxed{x = 5}$$