

# Quiz Review Answers

A2

1. a)  $\log_4 x^2 + \log_4 z^4 - \log_4 y^{13}$

$$\log_4 \left( \frac{x^2 z^4}{y^{13}} \right)$$

b)  $\log 7 + \log 4 - \log 8$

$$\log \left( \frac{7 \cdot 4}{8} \right)$$

$$\log \left( \frac{28}{8} \right) = \log \left( \frac{7}{2} \right)$$

2. a)  $\log_5 x^2 + \log_5 y^3 - \log_5 z^{1/2}$

$$2\log_5 x + 3\log_5 y - \frac{1}{2}\log_5 z$$

b)  $\log_2 x^{6/5} + \log_2 y^2 - \log_2 z^{4/3} - \log_2 k^{1/3}$

$$\frac{6}{5}\log_2 x + 2\log_2 y - \frac{4}{3}\log_2 z - \frac{1}{3}\log_2 k$$

3. a)  $\frac{3(6^{x+1})}{3} = \frac{9}{3}$

$$6^{x+1} = 3$$

$$\log_6 3 = x+1$$

$$\frac{\log 3}{\log 6} = x+1$$

$$\frac{\log 3}{\log 6} - 1 = x$$

b)  $5^{x-2} + \frac{7}{-2} = 10 - 2$

$$5^{x-2} = 8$$

$$\log_5 8 = x-2$$

$$\frac{\log 8}{\log 5} = x-2$$

$$\frac{\log 8}{\log 5} + 2 = x$$

3c.  $\log_2 (3(x+7)) = 2$

$$2^2 = 3(x+7)$$

$$4 = 3x+21$$

$$-17 = 3x$$

$$\frac{-17}{3} = x$$

d.  $\log_2 \left( \frac{x-5}{x} \right) = 3$

$$2^3 = \frac{x-5}{x}$$

$$8 = \frac{x-5}{x}$$

$$8x = x-5$$

$$7x = -5$$

$$x = -5/7$$

4a)  $\log_2 (4(x+7)) = \log_2 (x-5)$

$$4(x+7) = x-5$$

$$4x+28 = x-5$$

$$3x = -33$$

$$x = -11$$

b)  $\log_4 \left( \frac{x+2}{x} \right) = \log_4 (9)$

$$\frac{x+2}{x} = 9$$

$$x+2 = 9x$$

$$2 = 8x$$

$$\frac{1}{4} = x$$

5. a)  $\log_8 32 = x$

$$8^x = 32$$

$$2^{3x} = 2^5$$

$$3x = 5$$

$$x = 5/3$$

$$5b) \log_5 125 = x$$

$$5^x = 125$$

$$5^x = 5^3$$

$$\boxed{x=3}$$

$$5c) \log_7 343^2 = x$$

$$7^x = 343^2$$

$$7^x = 7^{3(2)}$$

$$x = 3(2)$$

$$\boxed{x=6}$$