

# Review for unit 2: Exponents & Logarithms Exam

KEY

1)  $u^{5/12} = v$

2)  $11^p = 55$

3)  $\log_b 116 = a$

4)  $\log_n \left(\frac{3}{7}\right) = -4$

5) Domain:  $x \in \mathbb{R}$  Range:  $y < 3$   
x-int:  $(1.5, 0)$  y-int:  $(0, 2)$   
equation of asymptote:  $y = 3$  (H)  $\checkmark$   
growth or decay? growth

6) 5.56

7) -3.32

8)  $\ln x + 4 \ln e$   
 $\ln x + 4$

9)  $2 \log y - \log 10$   
 $2 \log y - 1$

10)  $\log \left(\frac{8a}{2b}\right)$   
 $\log \left(\frac{4a}{b}\right)$

11)  $\log_2 \left(\frac{8 \cdot 3}{2^2}\right)$   
 $\log_2(6)$

12)  $2^{3x+3} = (2^3)^{2x}$   
 $3x+3 = 6x$   
 $3 = 3x$   
 $x = 1$

13)  $(3^3)^{x+2} = (3^2)^{2x-1}$   
 $3x+6 = 4x-2$   
 $-x = -8$   
 $x = 8$

14)  $2x = \log_5 12$   
 $x = \frac{1}{2} \log_5 12$   
 $x = 0.772$

15)  $e^{4x-5} = 11250$   
 $4x-5 = \ln 11250$   
 $x = \frac{(\ln 11250) + 5}{4} \approx 3.58$

16)  $2m+3 = m+12$   
 $m = 9$

17)  $36-x = 42-3x$   
 $2x = 6$   
 $x = 3$



$$18) \log_2 x = 2$$

$$x = 2^2$$

$$x = 4$$

$$19) \log_2 3x = 3$$

$$3x = 2^3$$

$$x = \frac{8}{3}$$

$$20) a) A = 40000 \left(1 + \frac{.092}{12}\right)^{12t}$$

$$b) A = 40000 \left(1 + \frac{.092}{12}\right)^{12(5)}$$

$$A = \$63251.89$$

$$21) a) A = 500 \left(1 + \frac{0.3199}{12}\right)^{12t}$$

$$b) 1000 = 500 \left(1 + \frac{0.3199}{12}\right)^{12t}$$

$$2 = \left(1 + \frac{0.3199}{12}\right)^{12t}$$

$$\frac{12t}{12} = \frac{\log_{1 + \frac{.3199}{12}}(2)}{\frac{.3199}{12}}$$

$$t \approx 2.2 \text{ years}$$

$$22) a) m = 90 \left(\frac{1}{2}\right)^{\frac{t}{5}}$$

$$b) m = 90 \left(\frac{1}{2}\right)^{3/5}$$

$$m = 59.4$$

$$23) f(x) = 0.90x$$

$$g(x) = x - 50$$

$$f(g(x)) = 0.90(x - 50)$$
$$= 0.90x - 45$$

$$f(g(1000)) = 0.90(1000) - 45$$
$$= \$855$$

24) c) reflected across the line  $y = x$  (because they are inverses)

$$25) f(x) = 3^x + 4 \quad f^{-1}(x) =$$

$$y = 3^x + 4 \quad \log_3(x - 4)$$

$$x = 3^y + 4$$

$$x - 4 = 3^y$$

$$\log_3(x - 4) = y$$

$$28) 0.8697$$

(normalcdf(70, 1E99, 79, 8))

$$27) z_1 = \frac{28 - 30}{4} \quad z_2 = \frac{52 - 60}{10}$$

$$z_1 = -0.5$$

$$z_2 = -0.8$$

29) experimental study

He scored on his Chem test in relation to his peers since  $z_1 > z_2$

30) observational study

