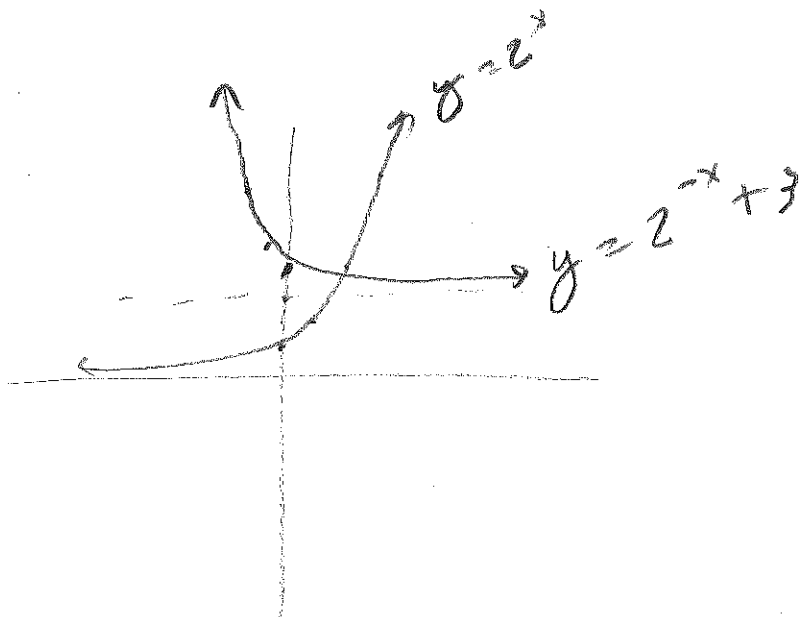


Review for Sections 3.1 - 3.3

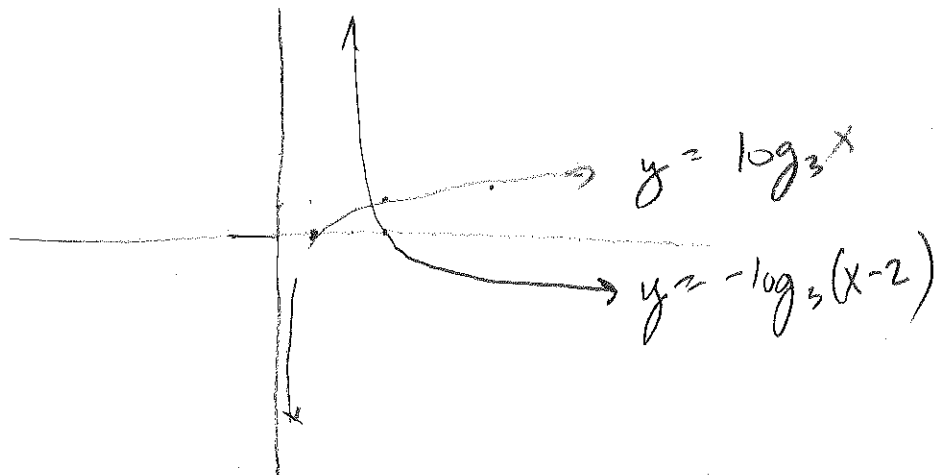
①  $\log_3(a) = 5 \Rightarrow 3^5 = a$

②  $10^{3x} = 81 \Rightarrow \log 81 = 3x$

③  $y = 2^{-x} + 3$



④  $y = -\log_3(x-2)$



$$(5) \quad 27^x = \left(\frac{1}{9}\right)^{2x}$$

$$(3^3)^x = (3^{-2})^{2x} \Rightarrow 3x = -4x$$
$$7x = 0$$
$$\boxed{x = 0}$$

$$(6) \quad \log_3(x+6) = 2\log_3(x)$$

$$\log_3(x+6) = \log_3 x^2$$

$$x+6 = x^2 \Rightarrow$$

$$x^2 - x - 6 = 0$$

$$(x-3)(x+2) = 0$$

$$\boxed{x = 3, -2}$$

$$(7) \quad a) \quad A = 500 \left(1 + \frac{.032}{4}\right)^{4(5)} = \$586.38$$

$$b) \quad A = 500 \left(1 + \frac{.032}{2(5)}\right)^{2(5) \cdot 5} = \$586.75$$

$$(8) \quad A = Pe^{rt} = 500 e^{(.032 \cdot 5)} = \$586.76$$

$$(9) \quad dB = 10 \log\left(\frac{I}{I_0}\right) = 10 \log\left(\frac{2.5 \times 10^{14} I_0}{I_0}\right)$$

$$= 133.98 \text{ dB} \quad \text{Yes!!}$$

$$(10) \quad A = 50 e^{-.0002(5)} = 49.95 \text{ gms}$$

$$(11) \quad \log_5\left(\frac{1}{25}\right) = \log_5 5^{-2} = -2$$

$$(12) \quad \log_5\left(\frac{2x^3y}{5z}\right) = \log_5 2x^3y - \log_5 5z$$

$$= \log_5 2 + 3\log_5 x + \log_5 y - \log_5 5 - \log_5 z$$

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

$$(13) \log_9 \frac{9x^4}{\sqrt[3]{y}} = \log_9 9x^4 - \log_9 y^{\frac{1}{3}}$$

$$= 1 + 4\log_9 x - \frac{1}{3}\log_9 y$$

$$(14) -\log_3 x + 3\log_3 4 - 7\log_3 y$$

$$= \log_3 x^{-1} + \log_3 4^3 + \log_3 y^{-7}$$

$$= \log_3 x^{-1} 4^3 y^{-7} = \log_3 \frac{64}{xy^7}$$

$$(15) -\log_4 64 + \log_4 2 - 4\log_2 4$$

$$= -3 + \frac{1}{2} - 4(2) = -\frac{5}{2} - \frac{16}{2} = -\frac{21}{2} =$$

$$\boxed{-10.5}$$

$$(16) \ln e^5 - 4 \log_{100} e^{\ln \frac{1}{2}}$$

$$= 5 - 4(2) \cdot \frac{1}{2} = 5 - 4 = 1$$