Algebra 2 Test 5.1 Review

Answer Key for Review

① $4^{2x-1} = 64^{5x/6}$

$(2^2)^{2x-1} = (2^6)^{5x/6}$

$2(2x-1) = 6\left(\frac{5x}{6}\right)$

$4x - 2 = 5x$

$\boxed{x = -2}$

② $5^x = 12$

$\log_5(12) = x$

$\boxed{x = 1.544}$

③ $9^x = 27^{x-2}$

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

$2x = 3(x-2)$

$2x = 3x - 6$

$\boxed{x = 6}$

④ $12^{x-4} = 8$

$\log_{12}(8) = x - 4$

$\boxed{x = 4.837}$

⑤ $\log_2(x+5) = 9$

$2^9 = x + 5$

$\boxed{x = 507}$

⑥ $24^{3x+2} = 27$

$\log_{24}(27) = 3x + 2$

$\boxed{x = -0.321}$

⑦ $\ln(5x-3) = 5$

$e^5 = 5x - 3$

$e^5 + 3 = 5x$

$\frac{e^5 + 3}{5} = x$

$\boxed{x \approx 30.283}$

⑧ $\log_4(2x) = 7 + \log_4(3)$

$\log_4(2x) - \log_4(3) = 7$

$\log_4\left(\frac{2x}{3}\right) = 7$

$4^7 = 2x/3$

$3 \cdot 4^7 = 2x$

$\boxed{x = 24,576}$

⑨ $\ln(7) - \ln(x) = 3$

$\ln\left(\frac{7}{x}\right) = 3$

$x \cdot e^3 = \frac{7}{x} \cdot x$

$\frac{x \cdot e^3}{e^3} = \frac{7}{e^3}$

$\boxed{x \approx 0.349}$

⑩ $2\log(x) + \log(4) = 2$

$\log(x)^2 + \log(4) = 2$

$\log(4x^2) = 2$

$10^2 = 4x^2$

$25 = x^2$

$\boxed{x = 5}$

⑪ $\log_6(x-5) + \log_6(x) = 2$

$\log_6 x(x-5) = 2$

$\log_6 x^2 - 5x = 2$

$6^2 = x^2 - 5x$

$0 = x^2 - 5x - 36$

$(x-9)(x+4) = 0$

$x = 9 \quad x = -4$

$\boxed{x = 9}$

⑫ $A = P_e rt$

$= 4750e^{(.045)(6)}$

$\boxed{= \$6222.33}$

⑬ $y = P_e rt$

$= 6000e^{(.05)(x)}$

$\boxed{x \approx 10.2 \text{ years}}$

⑭ $f(x) = -\left(\frac{3}{4}\right)^x + 5$

⑮ $g(x) = \ln(x+2) - 4$

⑯ $h(x) = -2^{x-7}$

⑰ $y = a(.5)^x$

$= 105(.5)^{75/113}$

$\boxed{y = 66.3 \text{ mg}}$

⑱ $y = a(.5)^x$

$= 240(.5)^{x/4}$

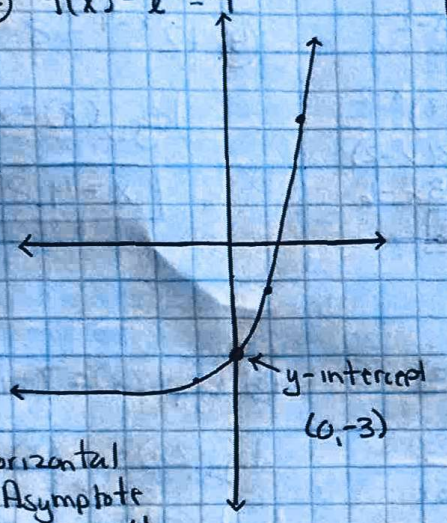
$\boxed{x \approx 11 \text{ years}}$

⑲ Horizontal Asymptote $y = 1$

⑳ Vertical Asymptote $x = -5$

㉑ Horizontal Asymptote $y = 0$

(22) $f(x) = e^x - 4$

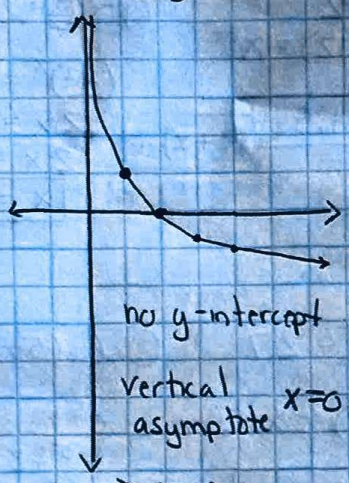


Horizontal Asymptote
$y = -4$

D: $\mathbb{R}$

R: $y > -4$

(23) $f(x) = -\log_2(x) + 1$



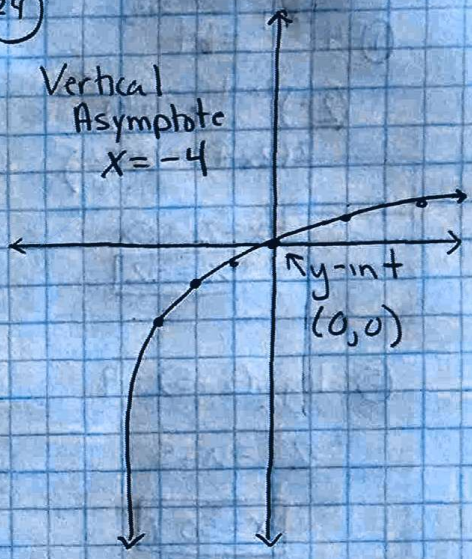
no y-intercept

vertical asymptote $x = 0$

D: $x > 0$

R: $\mathbb{R}$

(24)



D: $x > -4$

R: $\mathbb{R}$