Test Review - Full Sheet

KEY
In-Class Review

① Half Life:

$\text{Amount} = \text{Initial}\left(\frac{1}{2}\right)^{t/\text{halflife}}$

$X = 1200\left(\frac{1}{2}\right)^{900/600}$

$\boxed{X = 424.26 \text{ grams}}$

② $5^{3x} = 40$

$\frac{3x \ln 5}{3 \ln 5} = \frac{(\ln 40)}{(3 \ln 5)}$

$\boxed{X = .7640}$

③ $y = 7(2.5)^x$ use Regression on calc.

④ $A = Pe^{rt}$

$100000 = Pe^{(.05)(3)}$

$100000 = 1.1618P$

$\$86,070.80 = P$

⑤ $y = -.067x + 7.95$ linear Regression

⑥ $\log 6p^5 = \boxed{\log 6 + 5\log p}$

⑦ $\frac{3\pi}{5} \cdot \frac{180}{\pi} = \boxed{108°}$

⑧ $\cos\left(\frac{\pi}{3}\right) = \frac{1}{2}$ $\sin\frac{\pi}{3} = \frac{\sqrt{3}}{2}$

⑨ $y = kx$

$1.8 = k(-.72)$

$-2.5 = k$

$y = -2.5x$

$= -2.5(-3.56)$

$\boxed{y = 8.9}$

(10) $\ln(3x+4)=6$

$e^6 = 3x+4$

$403.4288 = 3x+4$

$133.1429 = x$

(11) $A = 512\left(\frac{1}{2}\right)^{11/63}$

$A = 453.64g$

(2) $A = Pe^{rt}$

$A = 1100e^{(.008)(25)}$

$A = \$2128.27$

(13) $9^{8x} = 54$

$8x \ln 9 = \ln 54$

$x = \frac{\ln 54}{8 \ln 9}$

$x = .2269$

(14) $y = 2\cos\frac{1}{4}x$

$\text{period} = \frac{2\pi}{b} = \frac{8\pi}{1}$

$\frac{2\pi}{8\pi} = \frac{8\pi b}{8\pi}$

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

(5) $y = 505(1.29)^x$

growth $= 1 + r$

(7) $7e^{4x} + 3 = 21$

$-3 \quad -3$

$\frac{7e^{4x}}{7} = \frac{18}{7}$

$e^{4x} = 2.5714$

$\frac{4x}{4} = \frac{\ln 2.5714}{4}$

$x = .2361$

(17) $A = 32900(1-.15)^x$

$= 32900(.85)^8$

$A = \$8964.94$

(18) $h = 301(326)^{1/4}$

$h = 70.84$

(19) $1024^{3/5} = 64$

(20) $y = -4x^2 - 4x - 3$

$x = 7$ $\quad y = -227$

quad reg.

(21) $10^1 = 4x + 14$

$10 = 4x + 14$

$-14 \quad -14$

$-4 = 4x$

$\boxed{-1 = x}$

(22) $t = 0 \quad 1880$

$t = 120 \quad 2000$

$P = 225(3)^{.06(120)}$

$\boxed{P = 612993}$

(23) $P = 130^{-3/2} = y$

$\boxed{\log_{30} P = -3/2}$

(24) $\log x^7 y^6$

(25) $5\log(2x) - 1 = 6$

$+1 \quad +1$

$\frac{5\log(2x) = 7}{5} \quad \frac{}{5}$

$\log 2x = 1.4$

$10^{1.4} = 2x$

$25.1189 = 2x$

$\boxed{12.559 = x}$

(26) $\tan 72 = \frac{x}{100}$

$\boxed{x = 307.8 \text{ ft}}$

(27) $y = 2000(1.0379)^x$

↑ initial ↑ growth

(28) $\frac{1800}{1200} = \frac{1200(1.015)^x}{1200}$

$1.5 = (1.015)^x$

$\ln 1.5 = x \ln 1.015$

$\boxed{x = 27.2 \text{ yrs ago}}$

(29)

rm: A

(29) $120000 = 100000(b)^3$

$(1.2)^{1/3} = (b^3)^{1/3}$

$1.063 = b$

$b = 1 + r$

$1.063 = 1 + r$

$.063 = r$

6.3%

(30) $A = P\left(1 + \frac{r}{n}\right)^{nt}$

$A = 500\left(1 + \frac{.06}{4}\right)^{4t}$

$\frac{200}{500} = \frac{500(1.015)^{4t}}{500}$

$4 = 1.015^{4t}$

$\frac{\log 4}{4\log(1.015)} = \frac{4t\log(1.015)}{4\log 1.015}$

$\frac{\log 4}{\log(1.015)} = t$

$.0065 = t$

(31) $-310 \cdot \frac{\pi}{180} = \boxed{-\frac{31\pi}{18}}$

(32) $y = 200\left(\frac{1}{2}\right)^{x/8}$

(33) $\log 8^3 \cdot a^2$

$\log 512a^2$

(34) $\frac{\log 216}{\log 6} = \boxed{3}$

(35) $\log_{64} 256 = \frac{4}{3}$

(36) $y = \frac{K}{x}$

$K = xy$ (constant)

$K = (23)(16)$

$K = 368$

$y = \frac{368}{x}$

$48 = \frac{368}{x}$

$\$7.67 = x$

(37) 3

(38) $\log 12 + 3\log b$