1b. $10^{2\log(2\pi)} = 10^{\log(2\pi)^2}$

$= (2\pi)^2 = 4\pi^2$

2b $2^{(x-1)} = 10$

$\log 2^{(x-1)} = \log 10$

$(x-1)\log 2 = 1$

$x-1 = \dfrac{1}{\log 2}$

$x = 1 + \dfrac{1}{\log 2}$

a $P(t) = 100(2)^{t/3}$

b $P(t) = 100e^{kt}$

$$e^k = 2^{1/3}$$

$$k = \ln 2^{1/3} = \frac{1}{3}\ln 2$$

c $950 = 100(2)^{t/3}$

$$9.5 = 2^{t/3}$$

$$\log 9.5 = \frac{t}{3}\log 2$$

$$\frac{3\log 9.5}{\log 2} = t$$

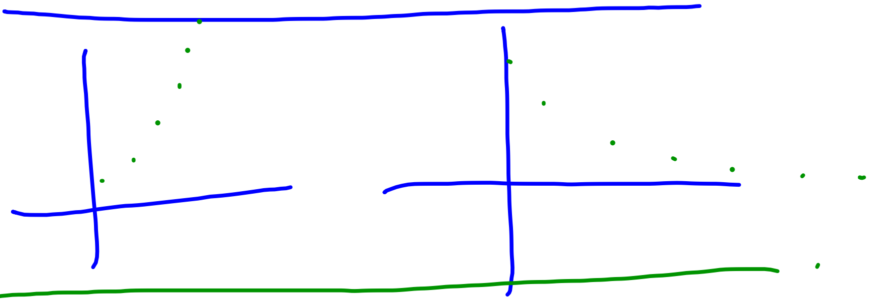
$\boxed{11}$ $11 - 11(0.1) + 11(0.1)^2 - \cdots$

$a_n = a_1 r^{n-1}$

$a_n = 11(-0.1)^{n-1}$

$$\sum_{n=1}^{\infty} a_n = \frac{11}{1+0.1} = \frac{11}{1.1} = 10$$

general formula: $\sum_{n=1}^{\infty} = \frac{a_1}{1-r}$



ex $0.\bar{9} = \frac{9}{10} + \frac{9}{100} + \frac{9}{1000} + \frac{9}{10{,}000} + \frac{9}{100{,}000}\cdots$

13 $\sum_{i=4}^{\infty} \left(\frac{1}{3}\right)^i = \sum_{i=1}^{\infty} \left(\frac{1}{3}\right)^i - \sum_{i=1}^{3} \left(\frac{1}{3}\right)^i$

$$= \frac{\frac{1}{3}}{1-\frac{1}{3}} - \left(\frac{1}{3} + \frac{1}{9} + \frac{1}{27}\right)$$

reminder: finite geometric series.

$$\sum_{i=1}^{k} a_1 r^{i-1} = \frac{a_1(1-r^k)}{1-r}$$

$\boxed{24}$

250mg. 4 times a day
every 6 hours
96% decay after 6hrs.

$A_1 = 250$

$A_2 = 250 + 250(0.04)$

$A_3 = 250 + 250(0.04) + 250(0.04)^2$

$$\sum_{i=1}^{30} A_i = \frac{250\left(1 - (0.04)^{30}\right)}{1 - 0.04}.$$