

## Math 118 Common Final Answers

- (a)  $P = 200t + 2500$   
(b)  $P = 2500(0.92)^t$   
(c)  $t \approx 11$ , so 2034
- (a) 9380.67  
(b) 9443.12  
(c) 9449.01
- (a) exponential decay  
(b)  $a=10.2$ ,  $b=0.851$ ,  $r=-0.149$   
(c)  $Q = 10.2e^{-0.16t}$
- 13.86 hours
- (a) amplitude is 2000, period is 12 months, midline is  $y = 3000$   
(b)  $P = -2000 \cos\left(\frac{\pi}{6}t + 3000\right)$   
(c)  $t = \frac{6}{\pi} \cos^{-1}(-1/4) \approx 3.48$   
(d) omitted
- $-2 \sin\left(\frac{\pi}{2}t\right) + 1$
- (a)  $-3/5$   
(b)  $\sqrt{55}/8$   
(c)  $\frac{12 - 3\sqrt{55}}{40}$   
(d)  $\frac{-9 - 4\sqrt{55}}{40}$
- (a) omitted  
(b)  $5 \tan(37^\circ) \approx 3.77$   
(c)  $5 / \cos(37^\circ) \approx 6.26$
- (a) 31  
(b)  $\log(10x + 32)$
- (a) 586  
(b)  $\frac{\ln(P/300)}{\ln(1.182)}$  or  $\frac{\log(P/300)}{\log(1.182)}$   
(c) 10
- $u(x) = \ln(x)$ ,  $v(x) = 15x - 3$
- (a)  $(\sqrt{128}, \frac{\pi}{4})$   
(b)  $(1, \sqrt{3})$
- About 49.87 miles