

### Calculus — Problem Set 9

2. a) see graphing calculator  
 b)  $x = 14.894$   
 $y = 12249.887$   
 c) 15 additional wells  
 d) 12,250 barrels per day
4. Vertex:  $\left(\frac{3}{2}, \frac{7}{4}\right)$   
 Axis of symmetry:  
 $x = 3/2$
6. a)  $10^{0.8633}$   
 b)  $e^{1.9879}$

8.  $y^{17/12} z^{11/6}$
10.  $b = 1$
12. a)
- b)  $f(1.2) = 1;$   
 $f(-1.2) = -2$

- 14
16.  $f(x) = \begin{cases} -2 & \text{for } x < 0 \\ x-1 & \text{for } 0 \leq x \leq 3 \\ 1 & \text{for } x > 3 \end{cases}$
- 18.
20.  $L = \frac{2}{3}x$
22. not a function
24. 5.5

### Calculus — Problem Set 10

2. a)  $A = 2x^2 + 400x^{-1}$   
 b)  $\{x \in R | x > 0\}$
4.  $A = 50x - \frac{3}{2}x^2$
6. a)  $f(-1) = -2$   
 b)  $f(1) = 2$   
 c)  $f(3) = 70$
8. roots are 1, 2, -2
10. 0.8203

12.  $x = -\frac{3}{2}$
14. a)  $x = \log 4 \approx 0.6021$   
 b)  $x = \ln 4 \approx 1.3863$
16.  $y = 5 + 4 \sin\left(\pi - \frac{3\pi}{8}\right)$   
 or  
 $y = 5 - 4 \sin\left(\pi + \frac{\pi}{8}\right)$
- 18.

- $$\frac{\sin^2 - \theta + \cos^2 - \theta + 2}{3 \tan - \theta} =$$
- $$\frac{1+2}{3 \tan - \theta} = \frac{1}{\tan - \theta} =$$
- $$\frac{1}{-\tan \theta} = -\cot \theta$$
22.  $f(x) = x^2 + x - 6$
24.  $x = 36^\circ$