

## Problem Set 72

2a.  $v(t) = -9.8t - 48$   
 $h(t) = -4.9t^2 - 48t + 160$

- b. 2.628 sec  
c. -73.756 m/sec

4.  $-\ln 8$

6.  $43^x \ln 43 + 3^x \ln 3 + \frac{1}{x \ln 3} - \frac{1}{x \ln 43}$

- 8a. max: 10      min: -22  
b. max: 10      min: -22

10.  $\pi \int_0^2 \left(-\frac{1}{2}x + 1\right)^2 dx$

12.  $e^{3x} \left(x - \frac{1}{3}\right) + C$

14.  $\frac{116}{15}$

- 16a. 1  
b. calculator graph  
c. 1

- 18a.  $a = 0; \quad b = 5$   
b.  $a = 1; \quad b = 4$

20a.  $\frac{dy}{dx} = -2 \sin x e^{\cos x}$   
 $\frac{d^2y}{dx^2} = 2e^{\cos x} (\sin^2 x - \cos x)$   
b.  $-\frac{5 \text{ units}}{2 \text{ sec}}$

22.  $\ln \sqrt{x^2 + 1} + C$

24.  $\frac{1000}{3} \text{ m}^3$