

# Math 122

## HW #2

6.5 # 21, 27

7.1 # 7, 10, 26

6.5 # 21

$$C = \frac{1}{10}(T-60)^2 + 100$$

$$\frac{dC}{dt} = \frac{2}{10}(T-60) \cdot \frac{dT}{dt}$$

plug

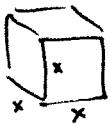
$$T = 76$$

$$\frac{dT}{dt} = 8$$

$$\frac{dC}{dt} = \frac{2}{10}(76-60) \cdot 8$$

$$= \frac{1}{5} \cdot 16 \cdot 8 = 25.6 \text{ crimes/month}$$

6.5 # 27



$$V = x^3$$

$$\frac{dV}{dt} = 3x^2 \frac{dx}{dt}$$

plug:  ~~$\frac{dV}{dt} = 2$~~   
 $x = 3$        $\frac{dV}{dt} = 2$

~~$\frac{dV}{dt} = 3 \cdot 3^2 \cdot \frac{dx}{dt} = 27 \cdot \frac{dx}{dt} = 2$~~

$$2 = 3 \cdot 3^2 \cdot \frac{dx}{dt}$$

$$\frac{dx}{dt} = \frac{2}{27} \text{ cm/min.}$$

$$= .074 \text{ cm/min}$$

7.1 #7

$$\int 2z + 3 \, dz = \frac{z^2 + 3z + C}{}$$

7.1 #10

$$\int 5x^2 - 6x + 3 \, dx = \frac{\frac{5}{3}x^3 - 3x^2 + 3x + C}{}$$

7.1 #26

$$\int 10x^{-3.5} + 4x^{-1} \, dx$$

$$= \frac{10}{-2.5} x^{-2.5} + 4 \ln x + C$$

$$= \frac{-4x^{-2.5} + 4 \ln x + C}{}$$