# Math 152

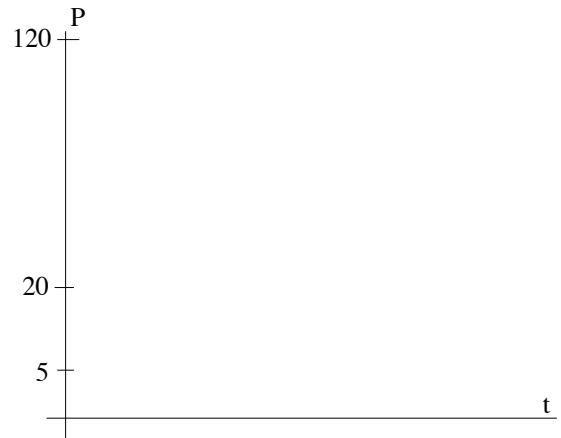November 21, 2008          **Do over the weekend!**

Practice Quiz  (much longer than a real quiz)

1. $\dfrac{dP}{dt} = -P\left(1 - \dfrac{P}{15}\right)\left(1 - \dfrac{P}{90}\right)$  represents the

   rate of change of population P with respect to time t.

   (a)  List the constant solutions,

   (b)  Sketch the **constant solutions** and the

          solutions with initial conditions

          y(0)=5, y(0)=20 and y(0)=120.

   *(graph: P-axis marked 120, 20, 5; t-axis horizontal)*

2. Solve for x:  $72 = 8 + 3e^{0.23x}$          x = _____ (4 decimal places)

3. $\dfrac{d}{dx}\arcsin(\,7x\,) =$ _____

4. $D\!\left(\arctan(3e^x)\right) =$ _____

5. $D\!\left(arc\sec^5(\,2x\,)\right) =$ _____

6. $\dfrac{d}{dt}\left(\arctan(2t+3)\right) =$ _____

7. $D\!\left(x^3 \cdot \arcsin(5x)\right) =$ _____

8. $D\!\left(\dfrac{x + \arctan(x)}{2 + \cos(3x)}\right) =$ _____

9. $\displaystyle\int \dfrac{4}{5 + x^2}\,dx =$ _____

10. $\displaystyle\int \dfrac{15x^2}{25 + x^6}\,dx =$ _____

11. $\displaystyle\int \dfrac{12}{\sqrt{9 - 4x^2}}\,dx =$ _____

12. $\displaystyle\int \dfrac{5}{\sqrt{9 - (x+2)^2}}\,dx =$ _____

13. $\displaystyle\int_0^7 \dfrac{3}{4 + x^2}\,dx =$ _____

14. $\displaystyle\int \dfrac{3\cos(x)}{9 + \sin^2(x)}\,dx =$ _____