

**Math Review – Physics 123, Gus Hart, Winter 2012**

1. Calculate the derivative of the following functions:

a.  $y = \sqrt{x}$

b.  $y = \sqrt{x}\sqrt{3-x}$

c.  $y = \sin(3x)$

d.  $y = e^{-5x} \sin(3x)$

e.  $y = \frac{1}{(3-2x)^4 + 1}$

2. Calculate the integrals of the following functions, with x going from 1 to 2:

a.  $y = 3x^2$

b.  $y = \frac{1}{x}$

c.  $y = \sin(5x)$

3. Perform the following matrix multiplication:

a.  $\begin{pmatrix} 3 & 5 \\ 2 & -5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$