

Nr. 3) a) $f(x) = \sin(x) \Rightarrow f'(x) = \cos(x) ; x_0 = 0$
 $f'(0) = \cos(0) = 1$

b) $f(x) = \sin(x) + 2x \Rightarrow f'(x) = \cos(x) + 2 ; x_0 = \frac{\tilde{\pi}}{2}$
 $f'(\frac{\tilde{\pi}}{2}) = \cos(\frac{\tilde{\pi}}{2}) + 2 = 0 + 2 = 2$

c) $f(x) = 2 \cos(x) \Rightarrow f'(x) = -2 \sin(x) ; x_0 = \frac{3}{2} \tilde{\pi}$
 $f'(\frac{3}{2} \tilde{\pi}) = -2 \cdot \sin(\frac{3}{2} \tilde{\pi}) = -2 \cdot (-1) = 2$

d) $f(x) = -3 \cdot \cos(x) + x^2 \Rightarrow f'(x) = +3 \cdot \sin(x) + 2x$
 $f'(2\tilde{\pi}) = 3 \cdot \sin(2\tilde{\pi}) + 2 \cdot 2\tilde{\pi} = 3 \cdot 0 + 4\tilde{\pi} = 4\tilde{\pi}$

e) $f(x) = -\frac{1}{2} \sin(x) + \frac{3}{2} x \Rightarrow f'(x) = -\frac{1}{2} \cos(x) + \frac{3}{2}$
 $f'(\frac{\tilde{\pi}}{2}) = -\frac{1}{2} \cos(\frac{\tilde{\pi}}{2}) + \frac{3}{2} = -\frac{1}{2} \cdot 0 + \frac{3}{2} = \frac{3}{2}$

f) $f(x) = \sin(x) - \cos(x) \Rightarrow f'(x) = \cos(x) + \sin(x)$
 $f'(\frac{\tilde{\pi}}{2}) = \cos(\frac{\tilde{\pi}}{2}) + \sin(\frac{\tilde{\pi}}{2}) = 0 + 1 = 1$