

## Physics 097 / Final Exam Review Sheet Answers

(1)  $f''(x) = \boxed{-30x}$

(2)  $f'(t) = \boxed{3at^2 \cos(at) + 6t \sin(at)}$

(3)  $\boxed{\text{max @ } x = -0.587}$ ;  $\boxed{\text{min @ } x = 0.454}$

(4)  $g'(x) = \boxed{\frac{(2x^3 - 1)[2xe^x + (x^2 - 5)e^x] - 6x^2(x^2 - 5)e^x}{(2x^3 - 1)^2}}$

(5)  $f(x) = 4 \ln(1+x)$ ;  $f'(2) = \boxed{1.33}$

(6) slope at  $x = -2$  is:  $\boxed{-600}$

(7) (a)  $a = \boxed{-3.7m/s^2}$  (b)  $\Delta x = \boxed{64.8m}$  (c)  $F = \boxed{-20,350N}$

(8) (a)  $\vec{F}_{net} = \boxed{127.7N @ 186^\circ}$  or  $\vec{F}_{net} = \boxed{-127N \hat{i} - 13.7N \hat{j}}$  (b)  $\vec{a}_{net} = \boxed{8.51m/s^2 @ 186^\circ}$

(9)  $a = \boxed{5.62m/s^2}$

(10)  $w = \boxed{0.476mg}$

(11)  $a = \boxed{6.53m/s^2}$ ;  $F_T = \boxed{32.7N}$

(12)  $\alpha = \boxed{183.8rad/s^2}$