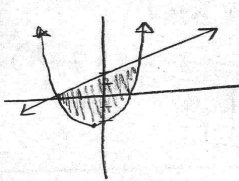


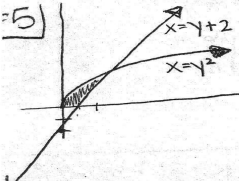
CHAPTER 7 Review

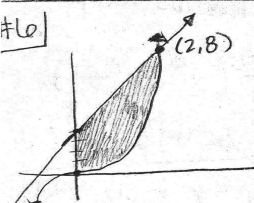
#1) $x(b) = x(0) + \int_0^b v(t) dt$
 $x(6) = 4 + \int_0^6 2(t^2+2)^3 dt = 4 + 100,468.1143 = \boxed{100,472.1143}$

#2) $v(t) = \int a(t) dt = \int 3\cos t dt = 3\sin t + C$
 $v(0) = 4, \therefore 4 = 3\sin(0) + C \Rightarrow v(t) = 3\sin t + 4$
 $4 = C \quad v(\pi) = 3\sin\pi + 4 = \boxed{4}$

#3) Beg. of 1990: $t=0$, Beg. of 1992: $t=2$, Beg. of 1998: $t=8$
 $\int_2^8 P(t) dt = \int_2^8 25000(1.089)^t dt = \boxed{232,250.074}$

#4)  $A = \int_{\text{Top function}} - \text{Bottom function}$
 $A = \int_{-2}^2 [(x+2) - (x^2+x-2)] dx$
 $= \int_{-2}^2 (-x^2+4) dx = \left[-\frac{x^3}{3} + 4x\right]_{-2}^2$
 $= \left(-\frac{8}{3} + 8\right) - \left(\frac{8}{3} - 8\right) = -\frac{16}{3} + 16 = \boxed{\frac{32}{3}}$
 Limits of Integrator:
 $x^2+x-2 = x+2$
 $x^2=4$
 $x = \pm 2$

#5)  Two Options: Split & integrate (dx)
 Integrate dy *
 $A = \int_0^2 [(y+2) - y^2] dy = \int_0^2 (y+2-y^2) dy$
 $= \left[\frac{y^2}{2} + 2y - \frac{y^3}{3}\right]_0^2 = \left[\left(2+4-\frac{8}{3}\right) - (0)\right] = \boxed{\frac{10}{3}}$
 Limits of Int:
 $y^2 = y+2$
 $y^2 - y - 2 = 0$
 $(y-2)(y+1) = 0$
 $y = 2 \quad y = -1$

#6)  $A = \int_0^2 [(2x+4) - x^3] dx = \int_0^2 (2x+4-x^3) dx$
 $= \left[x^2 + 4x - \frac{x^4}{4}\right]_0^2 = (4+8-4) - (0) = \boxed{8}$

* On this one \rightarrow just plug in points to find the intersection. There are none on your test that can't be factored. \cup