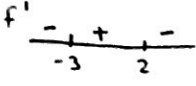
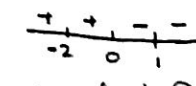


76 $f' > 0 \rightarrow f$ inc
 f' inc $\rightarrow f$ conc up
 [E]

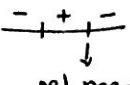

77 IVT $\rightarrow f(a) > k$
 $f(b) < k$ } $\therefore f(x) = k$ on (a,b)
 $f(2) = 10 > 13$
 $f(4) = 20 < 13$ } $\therefore f(x) = 13$ on $(2,4)$
 [A]

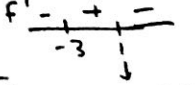
78 $y = e^{4\ln x} - 2$
 $0 = e^{4\ln x} - 2$
 $x = .606$
 $y'(0.606) = 2.961$
 [D]

79 avg velocity = $\frac{1}{b-a} \int_a^b v(t) dt$
 $= \frac{1}{8-0} \int_0^8 v(t) dt$
 [B]


80 f' 
 I. rel. min @ $x = -3$ ✓
 b/c f' neg to pos
 f'' 
 II. no inf pt @ $x = -2$ ✗
 III. f conc. down on $(0,4)$ ✓
 [E] I & III only

81 water in tank = initial water + \int rate water pump in
 $= 800 + \int_0^{20} r(t) dt$
 [D] $= 1220.143$

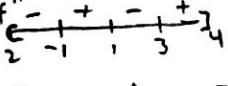
82 rel. max $\rightarrow f'$ changes pos to neg
 f' 
 rel. max @ $x = .350$

 [C]

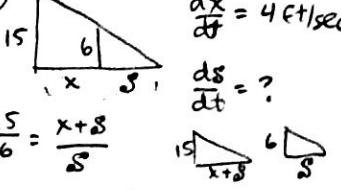
85 rel. max $\rightarrow f'$ changes pos to neg
 f' 
 rel. max @ $x = 1$
 [C]

83 total distance = $\int_a^b |v(t)| dt$
 $v(t) = 0$ @ $t = 8$
 distance = $\int_0^8 |v(t)| dt$
 over estimate ≈ 236
 under estimate ≈ 186
 \therefore [D]

84 f conc. down $\rightarrow f'' < 0$ or f' dec

 f' dec $\rightarrow (-1.5, -1) \cup (0, 1)$
 [D]

86 $\int_4^7 f(t) dt = 0$ $f' > 0 \rightarrow f$ inc, not conc
 area = 0 (need pos area + neg area)
 A \rightarrow all neg. area, not A
 E \rightarrow all pos. area, not E
 B \rightarrow some pos + neg, [B]

87 $f'' < 0 \rightarrow f$ conc. down
 f'' 
 f conc. down on $(-2, -1) \cup (1, 3)$
 [E]

88 $\frac{dx}{dt} = 4t$ / sec
 $\frac{ds}{dt} = ?$

 $\frac{15}{6} = \frac{x+s}{s}$
 $15s = 6x + 6s$
 $9s = 6x$
 $9 \frac{ds}{dt} = 6 \frac{dx}{dt}$
 $9 \frac{ds}{dt} = 6(4)$
 $\frac{ds}{dt} = 2.667$ ft/sec
 [B]


89 $v(3) = v(0) + \int_0^3 a(t) dt$
 $= 5 + \int_0^3 \frac{t+3}{\sqrt{t^3+1}} dt$
 [E] $= 11.710$

90 $\int_6^{12} f(2x) dx = 10$
 $u = 2x$ $u(12) = 24$
 $du = 2 dx$ $u(6) = 12$
 $\frac{1}{2} du = dx$
 $= \int_{12}^{24} f(u) \cdot \frac{1}{2} du$
 $= \frac{1}{2} \int_{12}^{24} f(u) du = 10$
 $\int_{12}^{24} f(u) du = 20$
 [B]

91

x	f'(x)	f''(x)
-2	3	>
0	1	>
3	4	>
5	7	>
6	5	>

 f'' changes signs twice,
 $\therefore f$ has at least 2 inf pts
 [B]

92 
 Area Square = $(\text{side})^2 = (\sqrt{x} - x^2)^2$
 $V = \int_0^1 (\sqrt{x} - x^2)^2 dx$
 $= .129$ [A]