

WKst #2: FTC

$$1) \int_1^4 f'(x) dx = F(4) - F(1)$$

$$17 = F(4) - 12$$

$$F(4) = 29$$

$$2) \int_2^5 f(x) dx + \int_2^5 3 dx = 17$$

$$2 \int_2^5 f(x) dx + (3x \Big|_2^5) = 17$$

$$2 \int_2^5 f(x) dx + 9 = 17$$

$$2 \int_2^5 f(x) dx = 8$$

$$\int_2^5 f(x) dx = 4$$

$$3) 1000 - \int_0^{60} 5 - 5e^{-0.12t} dt$$

$$= 741.636 \text{ liters}$$

$$4) \int_0^2 f'(x) dx = F(2) - F(0)$$

$$36 = F(2) - 100$$

$$a) F(2) = 136$$

$$b) 2(18) + 2(23)$$

$$82 = F(4) - 100$$

$$F(4) = 182$$

$$c) 2(18) + 2(23) + 2(25)$$

$$132 = F(6) - 100 \quad F(6) = 232$$

$$5) a) \int_0^5 f(x) dx + \int_0^5 2 dx$$

$$4 + (2x \Big|_0^5)$$

$$4 + 10 = 14$$

$$b)$$

$$\int_{-2}^3 f(x+2) dx = F(5) - F(0) = 4$$

$$c) \int_{-5}^5 f(x) dx = 8$$

even

$$d) \int_{-5}^5 f(x) dx = 0$$

odd

b) a) $2-1=1$ b) $2+(-2)=0$

c) $2+(-\frac{1}{2}(1)(3+2)) = 2 - \frac{5}{2} = -\frac{1}{2}$

d) $2+(-\frac{5}{2}) + \frac{1}{2} = 0$

e) $2+(-\frac{5}{2}) + \frac{1}{2} + 1 = 1$

7) a) $5+16=21$

$5+16-8=13$

$5+16-8+2=15$

b) Inc: $(0,2), (4,5)$

of slope is positive of $G(t)$

Dec: $(2,4)$

slope is negative of $G(t)$

c) cc \uparrow :

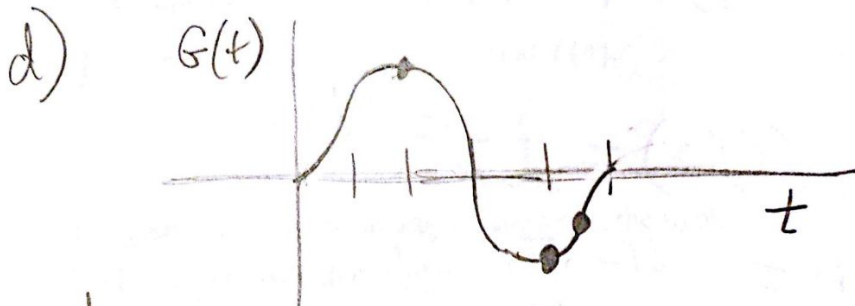
$(0,1), (3,4.5)$

slope of $g(t)$ is pos

cc \downarrow :

$(1,3), (4,5,5)$

slope of $g(t)$ is neg



8) $\int_0^1 e^{-x^2} dx = F(1) - F(0)$
 $F(1) = 2.747$

$$9) \int_{\frac{1}{2}}^1 2x dx + \int_1^5 2 dx$$

$$x^2 \Big|_{\frac{1}{2}}^1 + 2x \Big|_1^5$$

$$= \left(1 - \frac{1}{4}\right) + (10 - 2)$$

$$\frac{3}{4} + \frac{32}{4} = \frac{35}{4}$$

12) C

$$13) \int_1^3 \sqrt{x^2+2} dx = F(3) - F(1) = 5 - F(1)$$

B

$$14) \int_1^3 f(x) dx = F(3) - F(1)$$

$$2.3 = F(3) - F(1)$$

$$2.3 = F(3) - 2$$

$$F(3) = 4.3$$

D

$$\int_0^3 f(x) dx = F(3) - F(0)$$

$$4.3 - 0 = 4.3$$

$$10) a) \int_0^{12} T'(x) dx = F(12) - F(0)$$

$$= 93 - 105$$

$$= -12^\circ F$$

$$b) \frac{97-99}{8-5} = \frac{-2}{3}^\circ F/\text{min}$$

$$11) a) \int_{-2}^1 f(x) dx = F(1) - F(-2)$$

$$-\frac{1}{2}(2)(4) + \frac{1}{2}(1)(2) = 4 - F(-2)$$

$$-4 + 1 = 4 - F(-2)$$

$$-3 = 4 - F(-2)$$

$$b) \int_{-2}^5 f(x) dx = F(5) - F(-2)$$

$$-3 + \left(8 - \frac{1}{2}\pi(2)^2\right) = F(5) - F(-2)$$

$$-3 + 8 - 2\pi = F(5) - 7 \quad F(5) = 12 - 2\pi$$