4.) $f(1) = 5$

$$\int_{1}^{-2} f'(x)\,dx = f(x)\Big]_{1}^{-2}$$

a.) $f(-2) =$

$$\int_{1}^{-2} f'(x)\,dx = f(-2) - f(1)$$

$$-\int_{-2}^{1} f'(x)\,dx = f(-2) - 5$$

$$-\left(\frac{1}{2}(3)(3)\right) = f(-2) - 5$$

$$\frac{1}{2} = \quad -\frac{9}{2} + 5 = f(-2)$$

4b.) $\int_1^4 f'(x)\,dx = f(4) - f(1)$

$-3 = f(4) - 5$

$2 = f(4)$

*④ $\int_{-2}^{2}(x^7+k)\,dx=16$

$$\left.\frac{x^8}{8}+kx\right]_{-2}^{2}=16$$

$$\left(\frac{2^8}{8}+2k\right)-\left(\frac{2^8}{8}-2k\right)=16$$

$$4k=16$$

20.) $f(x) > 0$

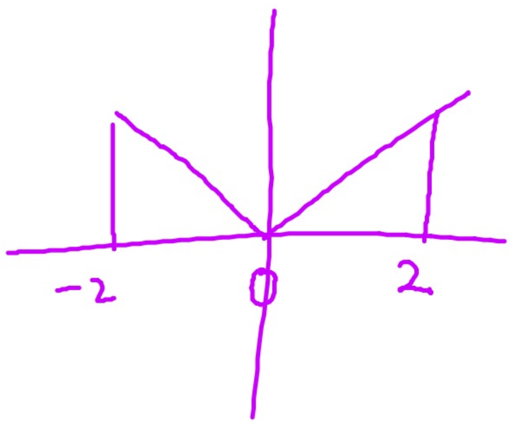
A ✓

B ✓

C even

D ✓

E ✓



3b) cubic feet per hour

$$\frac{1}{12}\int_0^{12} P(t)\,dt$$

Average <u>rate</u>

(ft^3/hr)

3a.) ft^3/hr

$P(t)$: derivative

$$\int_0^{12} P(t)\,dt = \underline{600}\ ft^3$$

5.) $\int_a^b f(x)\,dx = a+2b$

$\int_a^b f(x)\,dx + \int_a^b 5\,dx$

$a+2b + 5x\Big]_a^b$

$\cancel{2}$ $a+2b+5b-5a$

$\int_0^{\pi/4} \tan^2 x\,dx$

$1+\tan^2 x = \sec^2 x$

$\tan^2 x = \sec^2 x - 1$

$\int_0^{\pi/4} (\sec^2 x - 1)\,dx$

$\tan x - x \Big|_0^{\pi/4}$

1.) $\frac{1}{2-0}\int_0^2 \sqrt{x}\,dx$

$\frac{1}{2}\cdot\frac{2x^{3/2}}{3}\Big|_0^2$

d.) Abs. max value

$f(1) = 5$
3

Check endpoints and rel. max.

x	$f(x)$
-2	$1/2$
1	5
8	$2\pi+2$

$$\int_1^8 f'(x)\,dx = f(8) - f(1)$$

$$2\pi - 3 = f(8) - 5$$

$$2\pi + 2 = f(8)$$

Abs. max is $2\pi + 2$.