

Packet Pgs 5-6 Key:

$$11) \frac{1}{2}(3)(10+20) = 45$$

$$\frac{1}{2}(2)(20+40) = 60$$

$$\frac{1}{2}(1)(40+30) = 35$$

$$\frac{140}{\text{D}}$$

$$12) a) \frac{55-40}{50-40} = \frac{15}{10} = 1.5 \text{ gallons/min}^2$$

b) LRAM:

$$30(20) + 10(30) + 10(40) + 20(55) \\ + 20(65) = 3700 \text{ gal}$$

Yes - the function is increasing so the rectangles would be inscribed and therefore an underapproximation

$$13) \text{LRAM: } .25(28+25+20+22+7+10+21) \\ = 33.25 \text{ mi}$$

$$\text{RRAM: } .25(26+21+10+7+22+20+25) \\ = 32.75 \text{ mi}$$

14) A - decreasing, $c \uparrow$

15) a) .7813 b) .5313 c) .6563
d) .6719 e) $\frac{2}{3}$

16) a) 2 b) $\frac{968}{5}$ c) $\frac{-161}{20}$

d) 16 e) $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin x dx = -\cos x \Big|_{-\frac{\pi}{2}}^{\frac{\pi}{2}}$
$$-\cos\left(\frac{\pi}{2}\right) - \left(-\cos\left(-\frac{\pi}{2}\right)\right)$$
$$0 - 0 = 0$$

f) $\frac{25}{3}$

17) a) $\frac{x^3}{3} - \frac{1}{4x} + C$ b) $x + \frac{1}{2} \ln|x| + C$

c) $\frac{x^2}{2} - \ln|x| + \frac{1}{x} + C$ d) $\frac{x^2}{2} - \frac{2}{3}x^{3/2} + C$

e) $e^x - e^{-x} + C$