

MAT 099 $\$2.3$ #s 20, 27, 42, 54

#s 1-24 Solve for the specified variable.

(20) $C = \frac{5}{9}(F-32)$ for F :

LCD = 9

$$9C = 5(F-32)$$

$$9C = 5F - 160$$

$$9C + 160 = 5F$$

$$5F = 9C + 160$$

$$F = \frac{9C + 160}{5}$$

OR $\frac{9}{5}C + 32$

Another way:

F is inside the quantity,
so 1st isolate the quantity:

$$\frac{9}{5}C = \frac{9}{5} \cdot \frac{5}{9}(F-32)$$

$$\frac{9}{5}C = F-32$$

$$\frac{9}{5}C + 32 = F$$

(27) Principal = $P = \$6,000$ and APR = $r = 4\% = .04$.
What is the value after $t = 5$ years if account
is compounded...

a... semiannually: $n = 2$ in $P(1 + \frac{r}{n})^{nt}$:

$$A = 6000(1 + \frac{.04}{2})^{(2)(5)} \approx 7313.96652 \approx \boxed{\$7313.97}$$

b... quarterly: $n = 4 \Rightarrow$

$$A = 6000(1 + \frac{.04}{4})^{(4)(5)} \approx 7321.14024 \approx \boxed{\$7321.14}$$

c... monthly $\Rightarrow n = 12 \Rightarrow$

$$A = 6000(1 + \frac{.04}{12})^{(12)(5)} \approx 7325.979564 \approx \boxed{\$7325.98}$$

MAT 099 § 2.3 #542, 54

(42) Endeavor has a cylindrical cargo bay, with l = length 18.3 m and diameter = d = 4.6 m. Find its volume.



$$V = \text{Area of base times length } l$$
$$= \pi r^2 l \text{ where } r = \text{radius} = \frac{1}{2}d.$$

$$= \pi \left(\frac{1}{2}d\right)^2 l = \pi \left(\frac{1}{2} \cdot 4.6\right)^2 (18.3)$$

$$= \pi (2.3)^2 (18.3) = 196.807\pi \text{ m}^3$$

$$\approx 304.12816 \text{ m}^3$$

(54) A serving of yogurt has 120 calories, 21g of carbs, and 5g of protein. How much fat is there? (to the nearest tenth of a gram)

$$C = \text{calorie count (calories)} = 120$$

$$h = \text{carbs (grams)} = 21 \quad C = 4h + 9f + 4p$$

$$f = \text{fat (grams)} = ? \quad C = 120, h = 21, p = 5$$

$$p = \text{protein (grams)} = 5 \Rightarrow 120 = 4(21) + 9f + 4(5)$$

$$120 = 84 + 9f + 20$$

$$120 = 104 + 9f$$

$$16 = 9f$$

$$\frac{16}{9} = f$$

$$\boxed{\frac{16}{9} \approx 1.8 \text{ g of fat}}$$