HW 7 – Hints and partial solutions

Section 9.4

#1)

Computer A $x-3$

Computer B x

$t = 2$

$$\left(\frac{1}{x-3} + \frac{1}{x}\right)2 = 1$$

#3)

Roofer : $x-6$

Assistant : x

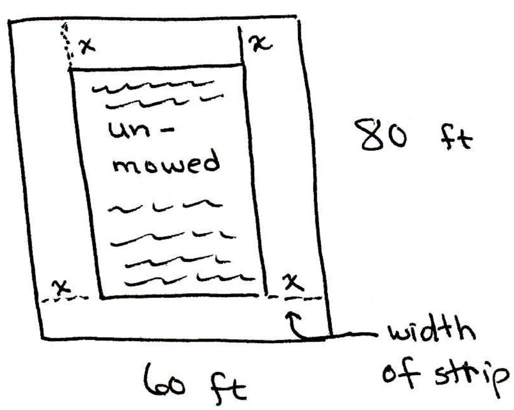
$t = 4$

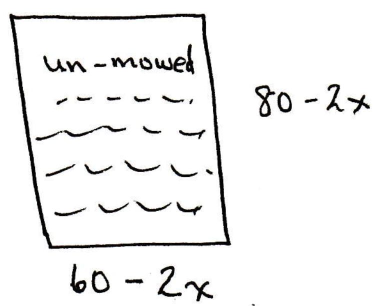
#5)

width : x

Length: $2x+4$ → twice the width by 4 feet

#9)





Area of unmowed $= \frac{1}{2}$(Area of entire lawn)

Hints for HW 7

Section 9.5

#1, 3, 5

→ isolate the radicals

→ when squaring, remember to FOIL

$$\begin{aligned}(7-x)^2 &= (7-x)(7-x)\\ &= 49 - 7x - 7x + x^2\\ &= 49 - 14x + x^2\\ &= x^2 - 14x + 49 \quad \text{rearrange the terms}\end{aligned}$$

#7, 9

→ Will need to square both sides twice (do steps 1 & 2 twice)

→ when squaring two radicals, use FOIL

$$\begin{aligned}\left(\sqrt{3x+4} - \sqrt{2x+1}\right)^2 &= \left(\sqrt{3x+4} - \sqrt{2x+1}\right)\left(\sqrt{3x+4} - \sqrt{2x+1}\right)\\ &= \sqrt{3x+4}\cdot\sqrt{3x+4} - \sqrt{3x+4}\cdot\sqrt{2x+1} - \sqrt{2x+1}\cdot\sqrt{3x+4}\\ &\quad + \sqrt{2x+1}\cdot\sqrt{2x+1}\\ &= (3x+4) - 2\sqrt{3x+4}\cdot\sqrt{2x+1} + (2x+1)\\ &= 5x+5 - 2\sqrt{(3x+4)(2x+1)}\end{aligned}$$

→ $\sqrt{x}\cdot\sqrt{x} = \sqrt{x^2} = x$

$\sqrt{(3x+4)}\cdot\sqrt{3x+4} = 3x+4$

Section 9.6

 # 23, 33

→ use the AC method for factoring

$2x^2 + 7x + 6 > 0$

$2x^2 + 4x + 3x + 6 > 0$

$2x(x+2) + 3(x+2) > 0$

$(2x+3)(x+2) > 0$

Aside

$ac = 12$

$b = 7$

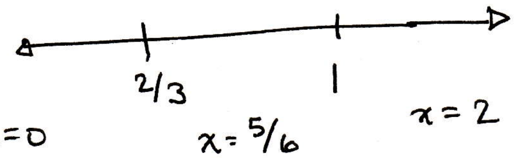
factors: 4, 3

Hints for HW 1

Section 9.6 Continued

#33 → Key points are $x = 2/3, 1$

→ Test points



→ $\boxed{x = 5/6}$ $\quad (3(5/6) - 2)(5/6 - 1)$

$\left(\frac{5}{2} - 2\right)\left(\frac{5}{6} - 1\right) \rightarrow \left(\frac{5}{2} - \frac{4}{2}\right)\left(\frac{5}{6} - \frac{6}{6}\right)$

$(+)(-) \qquad \left(\frac{1}{2}\right)\left(-\frac{1}{6}\right)$

$(-) \qquad (+)(-) \rightarrow (-)$

#31 → Even though $(x+1)$ can be removed via the cancellation principle, we still must consider $x = -1$ from the original equation.

Section 11.1

#7 → Compute $(f+g)(x)$ first
→ Then plug in $x = -1$

OR

→ Compute $f(-1)$
$g(-1)$
→ Add together
$f(-1) + g(-1)$

#11 $(f \circ g)(2) = f(g(2))$

→ can compute $g(2)$ first

$(g \circ f)(3) = g(f(3))$

#47 → Use cube root

$x = y^3 + 1$

$x - 1 = y^3 \rightarrow \sqrt[3]{x-1} = \sqrt[3]{y^3}$