# Quiz 11

**Solutions given without showing work may earn a zero. This quiz is closed-book, but you may use a calculator.**

**Problem 1.** **[3 points]** Simplify by first rationalizing the denominator.

$$\frac{9}{\sqrt{5}-\sqrt{2}}$$

**Problem 2.** **[3 points]** Solve for $x$.

*Don't forget to check for extraneous solutions.*

$$(8-3x)^{1/3} = -1$$

**Problem 3.** **[4 points]** Solve for $x$.

*Don't forget to FOIL and check for extraneous solutions.*

$$\sqrt{x+14} = x+2$$

(1) $\frac{9}{\sqrt{5}-\sqrt{2}} \cdot \frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}+\sqrt{2}} = \frac{9(\sqrt{5}+\sqrt{2})}{5-2} = \frac{\cancel{9}^{3}(\sqrt{5}+\sqrt{2})}{\cancel{3}}$

$= \boxed{3\sqrt{5}+3\sqrt{2}}$

(2) $8-3x = (-1)^3$

$8-3x = -1$

$-3x = -9$

$\boxed{x=3}$

ck: $(8-9)^{1/3} = (-1)^{1/3} = -1$ ✓

(3) $x+14 = (x+2)^2$

$x+14 = x^2+4x+4$

$0 = x^2+3x-10$

$-10$: $5, -2$; $+3$

$0 = (x+5)(x-2)$

$x = -5, 2$

ck: $x=-5$: $\sqrt{-5+14} = 3$

$-5+2 = -3$ ∴

$x=2$: $\sqrt{2+14} = 4$

$2+2=4$ ✓

$\boxed{x=2}$