

BE-Geometry I

Thursday 9-1-11

$$\textcircled{1} \sqrt{x^2 + 7x + \frac{49}{4}} = ?$$

Simplify:

$$\textcircled{2} (5 + \sqrt{15})^2 = ?$$

$$\textcircled{4} \sqrt{50}$$

$$\textcircled{3} \frac{2 + \sqrt{2}}{\sqrt{6}} = ?$$

$$\textcircled{5} \sqrt{18}$$

ANS:

$$\textcircled{1} \left(x + \frac{7}{2}\right) \text{ because } \left(x + \frac{7}{2}\right)\left(x + \frac{7}{2}\right) = x^2 + 7x + \frac{49}{4}$$

$$\textcircled{2} (5 + \sqrt{15})(5 + \sqrt{15}) = 25 + 5\sqrt{15} + 5\sqrt{15} + 15 = 40 + 10\sqrt{15}$$

$$\sqrt{4}\sqrt{3}$$

$$\textcircled{3} \frac{2 + \sqrt{2}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{2\sqrt{6} + \sqrt{2}\sqrt{6}}{6} = \frac{2\sqrt{6} + \sqrt{12}}{6}$$

$$= \frac{2\sqrt{6} + 2\sqrt{3}}{6}$$

$$\textcircled{4} \sqrt{50} = \sqrt{25}\sqrt{2} = 5\sqrt{2}$$

$$\textcircled{5} \sqrt{18} = \sqrt{9}\sqrt{2} = 3\sqrt{2}$$

$$= \frac{\sqrt{6} + \sqrt{3}}{3}$$

$$\textcircled{3} \quad 6p^2 + 12p - 41 = 7$$

$$6p^2 + 12p = 48$$

÷ By 6, GRE

$$p^2 + 2p + \{1\} = 8 + \{1\}$$

$$(p+1)^2 = 9$$

TAKEN $\sqrt{\quad}$ OF BOTH SIDES

$$p+1 = \pm 3$$

$$p = -1 \pm 3 \therefore p = \{2, -4\}$$

CK $6(2)^2 + 12(2) - 41 \stackrel{?}{=} 7$
 $p=2 \quad 24 + 24 - 41 \stackrel{?}{=} 7 \quad \checkmark$

CK $6(-4)^2 + 12(-4) - 41 \stackrel{?}{=} 7$
 $p=-4 \quad 6(16) - 48 - 41 \stackrel{?}{=} 7$
 $96 - 48 - 41 \stackrel{?}{=} 7 \quad \checkmark$

$$\textcircled{4} \quad 9x^2 + 18x + 14 = 7$$

$$9x^2 + 18x = -7$$

$$x^2 + 2x + \{1^2\} = \frac{-7}{9} + \{1\} = \frac{-7}{9} + \frac{9}{9}$$

$$(x+1)^2 = \frac{2}{9}$$

$$x+1 = \pm \frac{\sqrt{2}}{\sqrt{9}} = \pm \frac{\sqrt{2}}{3}$$

$$x = -1 \pm \frac{\sqrt{2}}{3} = -\frac{3}{3} \pm \frac{\sqrt{2}}{3}$$

$$\boxed{x = \frac{-3 \pm \sqrt{2}}{3}} \text{ or } x = \left\{ \frac{-3+\sqrt{2}}{3}, \frac{-3-\sqrt{2}}{3} \right\}$$

$$\underline{\text{QK}} \quad 9\left(\frac{-3+\sqrt{2}}{3}\right)^2 + 18\left(\frac{-3+\sqrt{2}}{3}\right) + 14 \stackrel{?}{=} 7$$

$$9\left(\frac{(-3+\sqrt{2})(-3+\sqrt{2})}{3^2}\right) + 6(-3+\sqrt{2}) + 14 \stackrel{?}{=} 7$$

$$9\left(\frac{9-3\sqrt{2}-3\sqrt{2}+2}{9}\right) - 18 + 6\sqrt{2} + 14 \stackrel{?}{=} 7$$

$$\textcircled{11} \quad \underline{-6\sqrt{2}} - \underline{18} + \underline{6\sqrt{2}} + 14 \stackrel{?}{=} 7$$

$$-7 + 14$$

$$\stackrel{?}{=} 7 \quad \checkmark$$

$$\textcircled{5} \quad 8x^2 + 16x + 16 = 10$$

$$8x^2 + 16x = -6$$

$$x^2 + 2x + \textcircled{1^2} = -\frac{6}{8} = -\frac{3}{4} + \textcircled{1}$$

$$(x+1)^2 = \frac{1}{4}$$

$$x+1 = \pm \sqrt{\frac{1}{4}} = \pm \frac{1}{2}$$

$$x = -1 \pm \frac{1}{2} \quad \therefore x = \left\{ -\frac{1}{2}, -\frac{3}{2} \right\}$$

$$\underline{\underline{CK}} \quad 8\left(-\frac{1}{2}\right)^2 + 16\left(-\frac{1}{2}\right) + 16 \stackrel{?}{=} 10$$

$$x = -\frac{1}{2} \quad 8\left(\frac{1}{4}\right) - 8 + 16 \stackrel{?}{=} 10$$

$$2 - 8 + 16 \stackrel{?}{=} 10 \quad \checkmark$$

$$\underline{\underline{CK}} \quad 8\left(-\frac{3}{2}\right)^2 + 16\left(-\frac{3}{2}\right) + 16 \stackrel{?}{=} 10$$

$$x = -\frac{3}{2} \quad 8\left(\frac{9}{4}\right) - 24 + 16 \stackrel{?}{=} 10$$

$$18 - 24 + 16 \stackrel{?}{=} 10 \quad \checkmark$$

$$\textcircled{6} \quad 2N^2 - 4N - 82 = 2$$

$$2N^2 - 4N = 84$$

$$N^2 - 2N + \{1^2\} = 42 + \{1\}$$

$$(N-1)^2 = 43$$

$$N-1 = \pm \sqrt{43}$$

$$\boxed{N = 1 \pm \sqrt{43}} \text{ or } N = \{1 + \sqrt{43}, 1 - \sqrt{43}\}$$

$$\underline{\underline{CK}} \quad 2(1+\sqrt{43})^2 - 4(1+\sqrt{43}) - 82 \stackrel{?}{=} 2$$

$$1+\sqrt{43} \quad 2[(1+\sqrt{43})(1+\sqrt{43})] - 4 - 4\sqrt{43} - 82 \stackrel{?}{=} 2$$

$$2[1 + 2\sqrt{43} + 43] - 4 - 4\sqrt{43} - 82 \stackrel{?}{=} 2$$

$$2[44 + 2\sqrt{43}] - 4 - 4\sqrt{43} - 82 \stackrel{?}{=} 2$$

$$\textcircled{88} + \underline{4\sqrt{43}} \quad \textcircled{-4} - \underline{4\sqrt{43}} - 82 \stackrel{?}{=} 2$$

84

$$-82 \stackrel{?}{=} 2 \checkmark$$

HW: WORKSHEET # 7 → 10, 12