# ALGEBRA II, 2ND EDITION
# – ON-LINE TEST 18 –
# REVISED: SEPTEMBER 2006

(This test covers material up to Lesson 72. Take this test after completion of Lesson 76.)

1. *The temperature of 10 liters of an ideal gas was increased from 600 to 800 Kelvins. If the volume remained constant and the final pressure was 30 atmospheres, what was the initial pressure ?*

(A) 22.5 atmospheres (B) 40 atmospheres (C) 16000 atmospheres

(D) 40 kelvins (E) none of these

2. *Solve:* $4x^2 + x - 6 = 0$ *The solution contains a fraction* $\pm$ *another fraction with a radical numerator. What is this fraction with a radical numerator ?*

(A) $\pm\frac{\sqrt{7}}{8}$ (B) $\pm\frac{\sqrt{22}}{4}$ (C) $\pm\frac{\sqrt{97}}{8}$ (D) $\pm\frac{\sqrt{6}}{4}$ (E) none of these

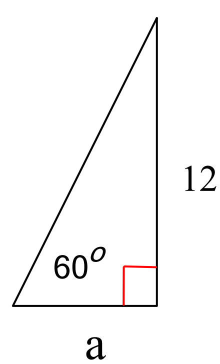
3. *Solve for unknowns:* $R_AT_A = 360$; $R_BT_B = 60$; $R_A = 3R_B$, $T_A+T_B = 12$
*Then evaluate:* $R_A - R_B + T_A - T_B =$

(A) 18 (B) 24 (C) 34 (D) 96 (E) none of these

4. *Find a.*

(A) $4\sqrt{3}$ (B) $6\sqrt{2}$ (C) $8\sqrt{3}$

(D) 6 (E) none of these



5. *Add:* $\dfrac{4x+12}{x-2} - \dfrac{2x+8}{-x+2}$

(A) $\dfrac{2x+4}{x-2}$ (B) $\dfrac{6x^2+24x+8}{x^2-4}$ (C) $\dfrac{6x+20}{x-2}$ (D) -2 (E) none of these

6. *What is the conjugate of* $-2+\sqrt{b}$ ?

(A) $-2-\sqrt{b}$ (B) $\dfrac{1}{-2+\sqrt{b}}$ (C) $b+4$ (D) $2+\sqrt{b}$ (E) none of these

7. *Estimate (using scientific notation and rounding each entry to two digits) and round off answer to two digits:* $(0.000014 \text{ x } 10^{-12})(849{,}018 \text{ x } 10^{4})$

(A) $1.2x10^{-9}$ (B) $1.2x10^{-12}$ (C) $1.2x10^{-2}$ (D) $1.2x10^{-8}$ (E) none of these

8. *Solve for $V_2$:* $\dfrac{P_1 V_1}{T_1} = \dfrac{P_2 V_2}{T_2}$

(A) $V_2 = \dfrac{P_1 P_2 T_1 T_2}{V_1}$ (B) $V_2 = \dfrac{P_2 T_1 V_1}{P_1 T_2}$ (C) $V_2 = V_1\left(\dfrac{P_1 P_2}{T_1 T_2}\right)$

(D) $V_2 = \dfrac{P_1 T_2 V_1}{P_2 T_1}$ (E) none of these

9. *Solve for x:* $4x^2 - 3x = -12$ *The solution contains a fraction* $\pm$ *another fraction with a radical numerator. What is this fraction with a radical numerator ?*

(A) $\pm\dfrac{\sqrt{201}}{8}$ (B) $\pm\dfrac{\sqrt{127}\ i}{8}$ (C) $\pm\dfrac{\sqrt{127}}{8}$ (D) $\pm\dfrac{\sqrt{183}\ i}{8}$ (E) none of these

10. *Solve:* $3x^2 + 8x - 24 = 0$ *The solution contains a reduced fraction* $\pm$ *another reduced fraction with a radical numerator. What is this fraction with a radical numerator ?*

(A) $\pm\dfrac{\sqrt{14}\ i}{3}$ (B) $\pm\dfrac{\sqrt{10}}{7}$ (C) $\pm\dfrac{\sqrt{17}}{6}$ (D) $\pm\dfrac{2\sqrt{22}}{3}$ (E) none of these

11. *Simplify:* $\dfrac{5}{3\sqrt{5}+\sqrt{3}}$

(A) $\dfrac{5}{14\sqrt{3}}+\dfrac{5\sqrt{5}}{14}$ (B) $\dfrac{15\sqrt{5}-5\sqrt{3}}{3\sqrt{15}}$ (C) $\dfrac{5}{16\sqrt{3}}+\dfrac{5\sqrt{5}}{16}$

(D) $\dfrac{5\sqrt{3}+\sqrt{5}}{3}$ (E) none of these

12. *45 liters of an ideal gas were under a pressure of 5 newtons per square meter. When 15 liters were added and the pressure increased to 10 newtons per square meter, the temperature became 900 kelvins. What was the original temperature ?*

(A) 2400 kelvins (B) 225 kelvins (C) 337.5 kelvins (D)600 kelvins (E) none of these

13. *Find b:* $ax = m\left(\dfrac{y}{a+b}+\dfrac{3z}{n}\right)$

(A) $\dfrac{-a^2nx+mny+3amz}{anx-3mz}$ (B) $\dfrac{-a^2x-anx+my+3mz}{ax}$ (C) $\dfrac{m(y+3z)}{anx}-a$

(D) $\dfrac{-a^2x+my+3az}{ax-3z}$ (E) none of these

14. *Solve for x:* $-5x^2 = 12 - 3x$ *The solution contains a fraction* $\pm$ *another fraction with a radical numerator. What is this fraction with a radical numerator ?*

(A) $\pm\dfrac{\sqrt{3}\ i}{2}$ (B) $\pm\dfrac{\sqrt{231}\ i}{10}$ (C) $\pm\dfrac{\sqrt{21}}{5}$ (D) $\pm\dfrac{\sqrt{21}\ i}{5}$ (E) none of these

15. *Expand:* $(x-4)^2$

(A) $x^2 - 16$ (B) $x^2 - 4x + 16$ (C) $x^2 - 8x - 16$ (D) $x^2 + 8x - 16$ (E) none of these

16. Simplify: $\dfrac{4}{6-2\sqrt{6}}$

(A) $1+\dfrac{\sqrt{6}\ i}{3}$ (B) $3+\dfrac{\sqrt{3}\ i}{3}$ (C) $2+\dfrac{3\sqrt{6}\ i}{4}$ (D) $2-\dfrac{\sqrt{6}}{6}$ (E) none of these

17. *35 percent of the members were late. If 455 were on time, how many members were there in all ?*

(A) 296 (B) 1300 (C) 15925 (D) 700 (E) none of these

18. *Simplify:* $(-4i + 13)(-i - 1)$

(A) $17i - 9$ (B) $-9i - 17$ (C) $-17 + 9i$ (D) $9 + 17i$ (E) none of these

19. *$0.3 \times 10^4$ liters of a ideal gas under a pressure of $0.0006 \times 10^6$ atmospheres had a temperature of $3500 \times 10^7$ K. After the volume was doubled and the pressure increased to $0.03 \times 10^5$ atmospheres, what was the temperature of this ideal gas ?*

(A) $3.5x10^9$ (B) $3.5x10^8$ (C) $3.5x10^{11}$ (D) $3.5x10^{12}$ (E) none of these

20. *The measure of the reflex angle in rhombus ABCD is 260°. Find x.*

(A) 130 (B) 65 (C) 50

(D) 40 (E) none of these