When you have finished, check your answers against the key which is on the last page. A score of 15 out of 20 is passing.

____1. Find the solution of the equation: $2(1-x) = x + 8$

A. $-3$
B. $6$
C. $-2$
D. $4$

____2. Find all real solutions of the equation: $x^2 + 3x - 10 = 0$

A. $2$
B. $-5, 2$
C. $5, -2$
D. $5$

____3. Simplify the expression: $x - 3 \cdot x + 3$

A. $-2x + 3$
B. $x^2 - 9$
C. $x^2 - 6x + 9$
D. $x^2 - 6x - 9$

____4. Find all complex solutions of the equation: $x^2 - 2x + 5 = 0$

A. $2 \pm 2i$
B. $0, 2$
C. $\dfrac{x^2 + 5}{2}$
D. $1 \pm 2i$

____5. Simplify the expression: $\dfrac{(x^2)^3}{(x^2)(x^3)}$

A. $1$
B. $x$
C. $x^2$
D. $x^3$

____6. Solve the literal equation for $P$: $A - P = \dfrac{A + P}{B}$

A. $P = \dfrac{A(B-1)}{B+1}$
B. $P = -A$
C. $P = 1$
D. $P = -\dfrac{P}{B}$

____7. Solve the inequality: $2 - x > 10$

A. $x < -8$
B. $x < -12$
C. $x > -5$
D. $x > -8$

____8. Perform the operations and simplify: $\frac{1}{\frac{1}{x} + \frac{1}{y}} =$

A. $x + y$
B. $\frac{x + y}{xy}$
C. $\frac{xy}{x + y}$
D. $\frac{1}{x} + \frac{1}{y}$

____9. Simplify the expression: $\frac{12m^4n}{15mn^2}$

A. $\frac{12m^3}{15n}$
B. $\frac{4m^3n}{5n^2}$
C. $\frac{4m^3}{5}$
D. $\frac{4m^3}{5n}$

____10. Simplify the expression by rationalizing the denominator: $\frac{1 + \sqrt{15}}{4 - \sqrt{15}}$

A. $1 + \sqrt{15}$
B. $19 + 5\sqrt{15}$
C. $\frac{2}{3}$
D. $\frac{1}{4}$

____11. What is the slope of the line through the points $(3, -1)$ and $(5, 7)$ ?

A. 3
B. $\frac{1}{4}$
C. 4
D. 1

____12. How would the following set be written in interval notation? $\{x \mid -2 < x \leq 1\}$

A. $(-2, 1)$
B. $(-2, 1]$
C. $(-\infty, -2) \cup [1, \infty)$

D. $[-2, 1)$

____13. Find the product of the complex numbers: $(2 - 3\,i)(1 + 2\,i)$

A. $8 + i$
B. $2 - 6\,i$
C. $-4 + i$
D. 8

____14. Find a value $c$ so that the quadratic expression will be a perfect square: $x^2 - 6x + c$

A. 36
B. $-9$
C. 9
D. $-36$

____15. Add the following fractions: $\dfrac{2}{x} + \dfrac{x-1}{x+1}$

A. $\dfrac{x^2 + x + 2}{x^2 + x}$
B. $\dfrac{x+1}{2x+1}$
C. 2
D. $\dfrac{2-x}{x}$

____16. Simplify the following expression: $\dfrac{x^3 - x^2 - 2x}{x^3 + 4x^2 + 3x}$

A. $-\frac{1}{4}$
B. $\dfrac{x-2}{x+3}$
C. $-\frac{2}{3}$
D. $-\frac{3}{7}$

____17. For what value of $x$ is the following expression undefined? $\dfrac{x-3}{2-x}$

A. 3
B. 3 and 2
C. 2
D. Its defined for all values of $x$

____18. Find the solution of the equation: $|\,1 - x\,| = 5$

A. 6
B. 4
C. $-4$
D. 6 and $-4$

____19. $\sqrt{(-4)^2} =$

A. $-4$

B. $-2$

C. 2

D. 4

____20. Perform the indicated operations and simplify the result: $\frac{2a^2b}{b^2} \div \frac{6a^3}{b}$

A. $\frac{12a^5}{b^2}$

B. $\frac{1}{3a}$

C. $\frac{1}{3a^2}$

D. $\frac{1}{3ab}$

Answer key on next page.

1→C 6→A 11→C 16→B
2→B 7→A 12→B 17→C
3→A 8→C 13→A 18→D
4→D 9→D 14→C 19→D
5→B 10→B 15→A 20→B