1) Evaluate the algebraic expression below for the values $x = -6$ and $y = 3$.

$$x^2 - 4(x - y) - 2$$

A -2
B 22
C 46
D 70
E -74

2) Write the English phrase as an algebraic expression, letting n represent the number.

Seven decreased by four times the sum of a number and five

A $4(n+5)-7$
B $7-4(n+5)$
C $4(n-5)-7$
D $7-4n+5$
E $7-4n-5$

3) Simplify this exponential expression.

$$\left(\frac{3x^2}{y^2}\right)^{-2}\left(\frac{2x^4}{y}\right)^3$$

A $\dfrac{8x^8y}{9}$
B $\dfrac{2x^8}{3y}$
C $\dfrac{6x^7}{y^3}$
D $\dfrac{-36x^8}{y}$
E None of the above.

4) There are approximately (5.256×10^4) minutes in a year. If Americans consume (6×10^3) pounds of chocolate per minute, approximately how many pounds of chocolate do Americans consume in a year?

A 31,536,000 pounds
B 8,760,000 pounds
C 31,536,000,000,000 pounds
D 315,360,000 pounds
E 87,600,000 pounds

5) Add/subtract where possible. Write answer in simplest form.

$$7\sqrt{54}-3\sqrt{150}+9\sqrt{96}+4\sqrt{6}$$

A $76\sqrt{6}$
B $46\sqrt{6}$
C $17\sqrt{6}$
D $19\sqrt{6}$
E None of the above.

6) Evaluate: $64^{\left(-\frac{2}{3}\right)}$

A $\frac{1}{16}$
B $\frac{1}{512}$
C -16
D $-\frac{1}{16}$
E -512

7) Which product(s) is(are) true?

I $(4-3x)(4+3x)=16-9x^2$

II $(2y-3)^2=4y^2+9$

III $(4a+1)(2a^2-3a+5)=8a^3-10a^2+17a+5$

A I and II only
B I and III only
C II and III only
D I, II, and III
E I only

8) Which is one factor of $6x^2-11xy-10y^2$?

A $3x-2y$
B $2x+5y$
C $6x+5y$
D $x-5y$
E $2x-5y$

9) Factor $12x^3+8x^2-27x-18$ completely. One of the polynomial's factors is which?

A $3x+2$
B $3x-2$
C $2x+1$
D $4x^2+9$
E None of the above.

10) Multiply. Write answer in simplest form.

$$\frac{x^2-9}{x^3-2x^2-15x}\cdot\frac{2x^3+x^2}{2x^2-5x-3}$$

A $\dfrac{x-3}{(x-5)(x+3)}$

B $\dfrac{9x}{(2x+15)(x-3)}$

C $\dfrac{x}{x-5}$

D $\dfrac{x(x+3)}{(x+5)(x-3)}$

E $\dfrac{x(x+3)}{(x+5)(x-3)}$

11) Add: $\dfrac{2}{x^2-x}+\dfrac{5}{x^2-1}$ Simplify answer.

A $\dfrac{2x+7}{x(x+1)(x-1)}$

B $\dfrac{7}{x(x+2)(x-1)}$

C $\dfrac{7x+1}{x(x+1)(x-1)}$

D $\dfrac{7x+2}{x(x+1)(x-1)}$

E $\dfrac{7x^2-5x-2}{x(x+1)(x-1)}$

12) Simplify this complex rational expression.

$$\frac{2+\dfrac{1}{y}}{4-\dfrac{1}{y^2}}$$

A $\dfrac{1}{2y-1}$

B $\dfrac{y}{2y+1}$

C $\dfrac{y}{1-2y}$

D $\dfrac{y}{2y^2-1}$

E $\dfrac{y}{2y-1}$

13) Perform the operations.

$(4x^2-2x+3)-(7x-x^2+8)-(-5x^2+6x-9)$

A $10x^2-15x+4$
B $10x^2-x+4$
C $8x^2-15x+4$
D $8x^2-15x+20$
E None of the above.

14) Which statement is false?

A $-|-12-11|=-23$
B $|\pi-4|=4-\pi$
C The polynomial $7x^2y-4x^4y^2-3x^3$ has degree 6.
D $2(x+3)+y(x+3)=(x+3)(2+y)$
E $-5>-3$

15) Rationalize the denominator and simplify.

$\dfrac{12}{3+\sqrt{3}}$

A $2\sqrt{3}$
B $6-2\sqrt{3}$
C $\dfrac{4\sqrt{3}}{3}$
D $6-\sqrt{3}$
E $6+2\sqrt{3}$