1) Which statement(s) below is(are) true?

I	The number 4.8 is a rational number.
II	Every rational number is an integer.
III	$\sqrt{12}$ is a rational number.

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

2) Simplify and collect (combine) like terms.

$$-4(x+2)+3y+\frac{1}{2}(4x-8y+10)-10x$$

A $-12x-y+13$
B $-12x-y-3$
C $-12x-5y+12$
D $-12x-5y+2$
E None of the above.

3) Which statement is **false**?

A $4^{-2}=\frac{1}{16}$
B $\left(x^{-3}\right)\left(x^{3}\right)=1$
C $3^{4}\cdot 3^{-8}\cdot 3=-27$
D $\left(-6\right)^{4}=1296$
E $\frac{8^{24}}{8^{-7}}=8^{31}$

4) Simplify. $\left(\frac{3p}{q^3}\right)^3\left(\frac{3p^4}{q^{-2}}\right)^{-1}$

A $\frac{81}{pq^7}$

B $\frac{9}{pq^{11}}$

C $\frac{-81p^7}{q^3}$

D $\frac{-81}{pq^{11}}$

E $\frac{9}{p^{12}q^{18}}$

5) In 2009, there was \$2,800,000,000 collected for taxes in Metropolis. If there were 160,000 residents in the city and the taxes were divided evenly among all residents, how much did each resident pay? (Use scientific notation.)

A $\$1.75\times10^3$

B $\$1.75\times10^5$

C $\$1.2\times10^4$

D $\$1.75\times10^4$

E $\$1.2\times10^5$

6) Simplify by combining, if possible.

$$3\sqrt{27}-4\sqrt{48}+\sqrt{243}$$

A $7\sqrt{3}$

B $\sqrt{243}-7\sqrt{3}$

C $-12\sqrt{3}$

D $2\sqrt{3}$

E None of the above.

7) Find this product. $\left(9^{\frac{1}{2}}\right)\left(4^{\frac{3}{2}}\right)$

A 24
B 1296
C 6
D 18
E 11

8) Simplify: $(7x^2-5x+1)-(4-5x)(4+5x)$

A $32x^2+20x-15$
B $32x^2-5x-15$
C $-18x^2-5x-15$
D $-32x^2+5x+15$
E $17x^2-5x-7$

9) Multiply. $(x-2)(5x^2-x+2)$

A $5x^3-11x^2-4$
B $5x^3-11x^2-4x+4$
C $5x^3-11x^2+4x-4$
D $5x^3+11x^2-4x-4$
E $5x^3+11x^2+4x-4$

10) One factor of $6n^2+23n-4$ is which of the following?

A $6n+1$
B $n-4$
C $3n-2$
D $3n+2$
E $n+4$

11) Factor $9x^3-4x+18x^2-8$ **completely**.

A $(3x+2)(3x-2)(x+2)$

B $(3x-2)^2(x+2)$

C $(3x+2)(3x-2)(x-2)$

D $(9x^2+4)(x-2)$

E $(3x+2)^2(x+2)$

12) Divide. Assume all denominators are nonzero.. $\dfrac{x^2-x-2}{3x^3-6x^2} \div \dfrac{x^2-1}{x^3+x^2-2x}$

A $\dfrac{(x-1)(x+2)^2}{3x(x-2)(x+1)}$

B $\dfrac{(x+1)(x-1)}{3x^3(x-2)}$

C $\dfrac{x+2}{3x}$

D $\dfrac{(x-1)(x-2)}{3x(x+1)}$

E $\dfrac{x-2}{3}$

13) Add. Assume all denominators are nonzero. $\dfrac{5}{x-2}+\dfrac{6}{x}+\dfrac{12}{x^2-2x}$

A $\dfrac{11}{x-2}$

B $\dfrac{11x+24}{x(x-2)}$

C $\dfrac{23}{x(x-2)}$

D $\dfrac{11x+10}{x(x-2)}$

E $\dfrac{5x+16}{x(x-2)}$

14) Solve the equation below. Describe the solution.

$$3 + \frac{1}{2(x+3)} = \frac{x}{x+3} + \frac{7}{2(x+3)}$$

A $x = 0$

B $x = 3$

C $x = -\frac{1}{2}$

D $x = -3$

E No solution

15) When Liam got his car repaired after an accident, he was charged $569 for parts and the remaining part of the bill was labor. If the total bill was $1025 and labor was $48 per hour, how many hours did they work on his car?

A 8.5 *hr*.

B 9.75 *hr*.

C 8.75 *hr*.

D 10.25 *hr*.

E None of the above.