Acc. Pre-Calculus Name: 2019

1-1 to 1-3 Exam Review Period_____

1. If A={2, -4, 3, 10, 12} and B={3, -2, 10} find:

A) $A \cap B$ $\boxed{\{3, 10\}}$

B) $A \cup B$ $\boxed{\{-4, -2, 2, 3, 10, 12\}}$

2. Express the interval [-4, 2) as an **inequality** and on a **number line.**

$\boxed{-4 \le x < 2}$

-4 2

3. Find $\{x \mid -5 < x \le 3\} \cup \{x \mid x \ge 2\}$, express your answer in all three representations.

-5 3

2

$x > -5$, $(-5, \infty)$, -5

4. Find $(-10, 1] \cap [-3, 4]$ express your answer in all three representations.

-10 1

-3 4

-3 1, $[-3, 1]$, $-3 \le x \le 1$

5. Perform the indicated operation and simplify:

a) $-3(x+2)[(x+5)(x-1)]$

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

$-3x^3-12x^2+15x$

$-6x^2-24x+30$

$\boxed{-3x^3-18x^2-9x+30}$

b) $3(x^2+2x-6)-(2x^2-4x+5)$

$3x^2+6x-18-2x^2+4x-5$

$\boxed{x^2+10x-23}$

c) $(x+3)(4x-5)$

$4x^2-5x+12x-15$

$\boxed{4x^2+7x-15}$

d) $(a+\sqrt{b})(\sqrt{a}-\sqrt{b})$

$\boxed{a\sqrt{a}-a\sqrt{b}+\sqrt{ab}-b}$

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

$4x^2+6x+6x+9$

$(4x^2+12x+9)(2x+3)=8x^3+36x^2+54x+2$

$8x^3+24x^2+18x+12x^2+36x+27$

Factor completely:

6. $3z^2+4z-4$

$(3z-2)(z+2)$

7. $4x^2-25$

$(2x-5)(2x+5)$

8. $2x^2+5x-12$

$(2x-3)(x+4)$

9. $100x^2 - 2500$

$100(x^2-25)$

$\boxed{100(x-5)(x+5)}$

10. $8x^6 + 125$

$\boxed{(2x^2+5)(4x^4-10x^2+25)}$

11. $x^3 - 27y^6$

$\boxed{(x-3y^2)(x^2+3xy^2+9y^4)}$

12. $x^4 + 27x$

$x(x^3+27)$

$\boxed{x(x+3)(x^2-3x+9)}$

13. $r^2(s^2-9)-16(s^2-9)$

$(r^2-16)(s^2-9)$

$\boxed{(r-4)(r+4)(s-3)(s+3)}$

14. $(a^2+1)^2 - 7(a^2+1) + 10$

$x=(a^2+1)$

$x^2-7x+10=(x-5)(x-$

$[(a^2+1)-5][(a^2+1)-2]$

$(a^2-4)(a^2-1)$

$\boxed{(a-2)(a+2)(a-1)(a+1)}$

15. $3x^{\frac{3}{2}} - 9x^{\frac{1}{2}} + 6x^{\frac{-1}{2}}$

$3x^{-1/2}[x^2-3x+2)$

$\boxed{3x^{-1/2}(x-2)(x-1)}$

16. $(x+2)^{\frac{9}{2}} - 4(x+2)^{\frac{1}{2}}$

$(x+2)^{1/2}[(x+2)^4-4]$

$(x+2)^{1/2}[(x+2)^2-2][(x+2)^2+2]$

$\boxed{(x+2)^{1/2}(x^2+4x+2)(x^2+4x+6)}$

17. $(x-1)(x+2)^2 - (x-1)^2(x+2)$

$(x-1)(x+2)[(x+2)-(x-1)]$

$\cancel{x}+2-\cancel{x}+1$

3

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

18. $6s(s^2+1)(s-3)^3+12(s-3)^2(s^2+1)^2$

$6(s^2+1)(s-3)^2[s(s-3)+2(s^2+1)]$

$s^2-3s+2s^2+2 = 3s^2-3s+2$

$\boxed{6(s^2+1)(s-3)^2(3s^2-3s+2)}$

Simplify the expression and eliminate any negative exponents. Assume all letters denote positive numbers.

19. $\dfrac{\left(32x^5y^{\frac{-3}{2}}\right)^{\frac{2}{5}}}{\left(x^{\frac{5}{3}}y^{\frac{2}{3}}\right)^{\frac{3}{5}}}$

$2^{\cancel{5}\cdot\frac{2}{\cancel{5}}}$

$\dfrac{4x^2\cancel{y^{-3/5}}}{x^1y^{2/5}\,y^{3/5}}$

$\boxed{\dfrac{4x}{y}}$

20. $\left(\dfrac{3x^{\frac{3}{2}}y^3}{x^2y^{\frac{-1}{2}}}\right)^2$

$\dfrac{9x^3y^6\,y^1}{x^4\cancel{y^{-1}}}$

$\boxed{\dfrac{9y^7}{x}}$

21. $(2a^2b^3c)\left(\dfrac{3a^2b^3}{c^4}\right)^{-2}$

$2a^2b^3c \cdot \dfrac{c^8}{9a^4b^6}$

$\boxed{\dfrac{2c^9}{9a^2b^3}}$

Simplify the expression.

22. $\sqrt{32}+\sqrt{18}$

16·2 9·2

$4\sqrt{2}+3\sqrt{2}$

$\boxed{7\sqrt{2}}$

23. $\sqrt{200}-\sqrt{32}$

100·2 16·2

$10\sqrt{2}-4\sqrt{2}$

$\boxed{6\sqrt{2}}$

24. $\sqrt[3]{54a^4b^7}\cdot\sqrt[3]{4ac^4}$

$\sqrt[3]{27\cdot 2\cdot 2\cdot 2\cdot a^5 b^7 c^4}$ $\boxed{6ab^2c\sqrt[3]{a^2bc}}$

3·3·3

$3\cdot 2\cdot a b^3\sqrt[3]{ab^2} = \boxed{\cancel{6ab^3\sqrt[3]{ab^2}}}$

25. $\sqrt[4]{32r^3s}\cdot\sqrt[4]{81rs^4}$

$\sqrt[4]{2\cdot 2\cdot 2\cdot 2\cdot 2\cdot 3^4\cdot r^4 s^5}$

$2\cdot 3\cdot r\cdot s\sqrt[4]{2s} = \boxed{6rs\sqrt[4]{2s}}$

Rationalize the denominator.

26. $\frac{3}{\sqrt[3]{x^2}}\cdot\frac{\sqrt[3]{x}}{\sqrt[3]{x}}$

$\boxed{\frac{3\sqrt[3]{x}}{x}}$

27. $\frac{x}{\sqrt[4]{8x^2}}\cdot\frac{\sqrt[4]{2x^2}}{\sqrt[4]{2x^2}}$

$\frac{x\sqrt[4]{2x^2}}{2x} = \boxed{\frac{\sqrt[4]{2x^2}}{2}}$

28. $\sqrt[3]{\frac{8x}{3y^2}}$

$\frac{\sqrt[3]{8x}}{\sqrt[3]{3y^2}}$

$\frac{2\sqrt[3]{x}}{\sqrt[3]{3y^2}}\cdot\frac{\sqrt[3]{9y}}{\sqrt[3]{9y}}$

$\boxed{\frac{2\sqrt[3]{9xy}}{3y}}$