Name answer key

Summer Assignment for Precalculus (M105)

Evaluate each expression

1. $7\times 2-5-3$ 6

2. $(-2)-\big((-10)-7\big)-7$ 8

3. $(-6)+\dfrac{20-10}{2}$ -1

Evaluate each expression using the values given

4. $p-\big(9+|9|-q\big)$; use $p=2$, and $q=5$ -11

5. $|x|+|z+z|$; use $x=6$, and $z=-6$ 18

6. $-\dfrac{10\,a\,|b|}{4}$; use $a=8$, and $b=-4$ -80

Simplify each expression

7. $4(5+8r)+8$ $32r+28$

8. $-6-4(2b-3)$ $-8b+6$

9. $7(6a-5)+7a(-2-4a)$ $-28a^2+28a-35$

10. $-2v(1+3v)-3v(v+3)$ $-9v^2-11v$

11. $-6x(-8x-3)-(x-2)$ $48x^2+17x+2$

12. $2(7+6x)-7(x+2)$ $5x$

Solve the following equations for the unknown x:

13. $\dfrac{1}{2}(x-3)+x=17+3(4-x)$ $x=\dfrac{61}{9}$

14. $\dfrac{5}{x}=\dfrac{2}{x-3}$ $x=5$

Multiply the indicated polynomials and simplify.

15. $(x-1)\big(x^2+x+1\big)$ x^3-1

16. $\big(x^3+2x-1\big)\big(x^3-5x^2+4\big)$ $x^6-5x^5+2x^4-7x^3+5x^2+8x-4$

Find the domain of each of the following functions.

17. $f(x)=\sqrt{1+x}$ $[-1,\infty)$

18. $f(x)=\dfrac{1}{1+x}$ $(-\infty,-1)\cup(-1,\infty)$

19. $f(x)=\dfrac{1}{\sqrt{1+x}}$ $(-1,\infty)$

20. Given that $f(x) = x^2 - 3x + 4$, find and simplify $f(3)$, $f(a)$, $f(-t)$, and $f\left(x^2+1\right)$.

$f(3) = 4$ $\quad f(-t) = t^2+3t+4$

$f(a) = a^2-3a+4$ $\quad f(x^2+1) = x^4-x^2+2$

Factor the following quadratics.

21. $x^2 - 10x + 21$ $\quad (x-7)(x-3)$

22. $-2x^2 + 7x + 15$ $\quad (2x+3)(-x+5)$

Solve the following equations and inequalities.

23. $\sqrt{x^2-3} = \sqrt{2x}$ $\quad x = 3$

24. $-2x + 4 \geq 3$ $\quad x \leq \frac{1}{2}$

25. $\frac{x+4}{x-3} = 2$ $\quad x = 10$

26. $|x-5| = 4$ $\quad x = 1, 9$

27. $x^2 - x - 2 > 0$ $\quad x < -1$ or $x > 2$

28. $\sqrt{x} = \sqrt{2x-1}$ $\quad x = 1$

Add/Subtract the following rational expressions.

29. $\frac{x^2+1}{(x-1)(x-2)} - \frac{x^3}{x-3}$ $\quad \frac{-x^5+3x^4-x^3-3x^2+x-3}{(x-1)(x-2)(x-3)}$

30. $\frac{x}{x+2} + \frac{3}{x-4}$ $\quad \frac{x^2-x+6}{(x+2)(x-4)}$

Simplify the rational expression if possible.

31. $\frac{x^2+5x+6}{x^2-3x+2}$ $\quad$ can factor but can't be simplified

32. $\frac{x^2+x-2}{x^2-1}$ $\quad \frac{x+2}{x+1}$

33. $\frac{\frac{x}{x+2}+3}{\frac{x+1}{x-1}}$ $\quad \frac{4x^2+2x-6}{x^2+3x+2}$

Solve the following quadratic equations in three ways: a) factor, b) quadratic formula, c) complete the square.

34. $-x^2 - 3x - 2 = 0$ $\quad x = -2, -1$

35. $2x^2 + 2x - 4 = 0$ $\quad x = -2, 1$