Math 11U Name Ms. Jacob

Cleaning off the mathematical cob webs

Date

Evaluate each expression. BEDMAS always!

1) $8(17+5)-(9(27-25+7)+19)$

$= 8(22)-(9(9)+19)$
$= 176-(81+19)$
$= 176-100$
$= 76$

2) $(33-(12+1^2)-17+19\times 3)\div 2$

$=(33-(12+1)-17+57)\div 2$
$=(33-13-17+57)\div 2$
$=(60)\div 2$
$=30$

Solve each equation.

3) $71 = 8-7p$

$\Rightarrow 71-8=-7p$
$\Rightarrow \frac{63}{-7}=\frac{-7p}{-7}$
$\Rightarrow \boxed{-9=p}$

4) $-10+\frac{x}{2}=-13$

$\Rightarrow \frac{x}{2}=-13+10$
$\Rightarrow \frac{x}{2}=-3$
$\Rightarrow x=-3\times 2=-6$
$\Rightarrow \boxed{x=-6}$

5) $-162 = 8(-4-8n)-2$

$\Rightarrow -162=-32-64n-2$
$\Rightarrow -162+32+2=-64n$
$\Rightarrow -128=-64n$
$\Rightarrow \frac{-128}{-64}=n \Rightarrow 2=n$
$\therefore \boxed{n=2}$

6) $6(n+4)=3(4n-6)$

$\Rightarrow 6n+24=12n-18$
$\Rightarrow 6n-12n=-18-24$
$\Rightarrow -6n=-42$
$\Rightarrow n=\frac{-42}{-6}=7$
$\Rightarrow \boxed{n=7}$

Solve each proportion. cross multiply!

7) $\frac{n}{7}=\frac{11}{3}$

$\Rightarrow 3n=77$
$\Rightarrow \boxed{n=\frac{77}{3}}$

8) $\frac{3}{x}=\frac{11}{6}$

$\Rightarrow 18=11x$
$\Rightarrow \boxed{\frac{18}{11}=x}$

9) $\frac{9}{2}=\frac{(n-2)}{n}$ * Binomial in Numerator or Denominator should be put in brackets.

$\Rightarrow 9n=2(n-2)$
$\Rightarrow 9n=2n-4$
$\Rightarrow 9n-2n=-4$
$\Rightarrow 7n=-4$
$\Rightarrow \boxed{n=\frac{-4}{7}}$

10) $\frac{(x+5)}{x}=\frac{7}{4}$

$\Rightarrow 4(x+5)=7x$
$\Rightarrow 4x+20=7x$
$\Rightarrow 20=7x-4x$
$\Rightarrow 20=3x$
$\Rightarrow \boxed{\frac{20}{3}=x}$

Solve each system by substitution to find the point of intersection.

11) $9x + 4y = -30$
$y = -12x + 12$

Sub equation (2) in equation (1)

$9x + 4(-12x + 12) = -30$

$\Rightarrow 9x - 48x + 48 = -30$

$\Rightarrow -39x + 48 = -30$

$\Rightarrow -39x = -30 - 48$

$-39x = -78$

$\Rightarrow x = \frac{-78}{-39} = 2$

$\therefore x = 2$

$\therefore y = -12(2) + 12$

$y = -24 + 12$

$y = -12$

$\therefore$ PoI $(2, -12)$

12) $8x - 2y = -12$
$y = 6x + 4$

Sub $y = 6x + 4$ in $8x - 2y = -12$

$\therefore 8x - 2(6x + 4) = -12$

$\Rightarrow 8x - 12x - 8 = -12$

$\Rightarrow -4x - 8 = -12$

$\Rightarrow -4x = -12 + 8$

$\Rightarrow -4x = -4$

$\Rightarrow x = \frac{-4}{-4} = 1$

$\therefore x = 1$

$y = 6(1) + 4$

$y = 6 + 4$

$y = 10$

$\therefore$ PoI $(1, 10)$

Add or subtract each polynomial by collecting like terms

13) $(7p^3 + 2p^2 - 4) + (8p^2 - 6p - 8)$

$\Rightarrow 7p^3 + (2+8)p^2 - 6p + (-4-8)$

$\Rightarrow 7p^3 + 10p^2 - 6p - 12$

14) $(7 + 4n - 4n^3) + (4n^2 - 8n^3 + 2n)$

$= (-4-8)n^3 + 4n^2 + (2+4)n + 7$

$= -12n^3 + 4n^2 + 6n + 7$

15) $(5x^3 - 3x^2 - 4) - (2x^3 + 6 - 6x^2)$

-ve sign changes the signs of the terms

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

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

$= 3x^3 + 3x^2 - 10$

16) $(x + 1 - 4x^2) - (4x^2 - x + 7)$

$= x + 1 - 4x^2 - 4x^2 + x - 7$

$= (-4-4)x^2 + (1+1)x + (1-7)$

$= -8x^2 + 2x - 6$

Evaluate the following using the fractions rules.

17) $\frac{9}{2} + \frac{3}{4}$

LCD $(2, 4) = 4$ Least common denominator

2×2

$= \frac{18}{4} + \frac{3}{4}$

$= \frac{21}{4}$

18) $\frac{3}{7} + \frac{9}{2}$

LCD $(2, 7) = 14$

7×2 $\quad 7 \times 2$

$= \frac{21}{14} + \frac{18}{14}$

$= \frac{39}{14}$

19) $5 - \frac{8}{5}$

LCD $(1, 5) = 5$

5×1

$= \frac{25}{5} - \frac{8}{5}$

$= \frac{17}{5}$

20) $\frac{5}{3} + \frac{7}{6}$

LCD $(3, 6) = 6$

$2 \times$ $\quad 2 \times 3$

$= \frac{10}{6} + \frac{7}{6}$

$= \frac{17}{6}$

21) $\frac{7}{5} \times -\frac{3}{8}$

Multiply the Numerator & Denominator across. Keep the (−) sign with the Numerator.

$= \frac{7 \times -3}{5 \times 8}$

$= \frac{-21}{40}$

22) $\frac{3}{5} \times \frac{5}{6}$

Cross out Common factors

$= \frac{1}{2}$

23) $\frac{1}{2} \div \frac{5}{9}$

change ÷ to × and flip the second fraction

$= \frac{1}{2} \times \frac{9}{5}$

$= \frac{9}{10}$

24) $\frac{9}{10} \div \frac{2}{3}$

$= \frac{9}{10} \times \frac{3}{2}$

$= \frac{27}{20}$

BEDMAS always !!!

25) $3 - \frac{3}{2} \div \left(\frac{1}{2} + \frac{1}{5}\right)$

$= \frac{3}{1} - \frac{3}{2} \div \left(\frac{5+2}{10}\right)$

$= \frac{3}{1} - \frac{3}{2} \div \frac{7}{10}$

$= \frac{3}{1} - \frac{3}{2} \times \frac{10^5}{7} = \frac{3}{1} - \frac{15}{7} = \frac{21-15}{7}$

$= \frac{6}{7}$

26) $2 - \left(\frac{5}{6}\right)^2 \div \left(1 - \frac{1}{3}\right)$

$= \frac{2}{1} - \frac{25}{36} \div \frac{2}{3}$

$= \frac{2}{1} - \frac{25}{36} \times \frac{3}{2}^1$

$= \frac{2}{1} - \frac{25}{24} = \frac{48}{24} - \frac{25}{24} = \frac{23}{24}$

Multiply the binomials.

27) $(5x - 4)(5x + 3)$

Foil

$= 25x^2 + 15x - 20x - 12$

$= 25x^2 - 5x - 12$

28) $(8v - 1)(v - 8)$

$= 8v^2 - 64v - v + 8$

$= 8v^2 - 65v + 8$

29) $(7x - 4)(5x + 3)$

$= 35x^2 + 21x - 20x - 12$

$= 35x^2 + x - 12$

30) $(6x - 8)(2x + 4)$

$= 12x^2 + 24x - 16x - 32$

$= 12x^2 + 8x - 32$

31) $(5r - 1)(8r - 6)$

$= 40r^2 - 30r - 8r + 6$

$= 40r^2 - 38r + 6$

32) $(2m - 6)(7m - 6)$

$= 14m^2 - 12m - 42m + 36$

$= 14m^2 - 54m + 36$

33) $(2b + 6)(5b + 3)$

$= 10b^2 + 6b + 30b + 18$

$= 10b + 36b + 18$

34) $(8x + 3)(6x + 4)$

$= 48x^2 + 32x + 18x + 12$

$= 48x^2 + 50x + 12$

35) $(6b - 3)(6b + 3)$

$(A - B)(A + B) = A^2 - B^2$

$= (6b)^2 - (3)^2$

$= 36b^2 - 9$

36) $(6x - 3)^2$

$= (6x - 3)(6x - 3)$

$= 36x^2 - 36x + 9$

37) $(7b + 2)^2 = (7b + 2)(7b + 2)$

$= 49b^2 + 28b + 4$

38) $(7x - 1)(7x + 1)$

$(A - B)(A + B) = A^2 - B^2$

Factor the common factor out of each expression.

39) $-45k^3 - 63k - 90$

$-9 \quad -9 \quad -9$

$= -9(5k^3 + 7k + 10)$

40) $10m^6 + 30m^3 - 30m$

$10m \quad 10m \quad 10m$

$= 10m(m^5 + 3m^2 - 3)$

41) $30x^3 + 80x^2 + 70x$

$10x \quad 10x \quad 10x$

$= 10x(3x^2 + 8x + 7)$

42) $-28n^6 + 35n^2 - 35n$

$7n \quad 7n \quad 7n$

$= 7n(-4n^5 + 5n - 5)$

Find the value of each trigonometric ratio to the nearest ten-thousandth (4 decimal places).

43) $\tan 54° = 1.3764$

44) $\sin 19° = 0.3256$

45) $\cos 82° = 0.1392$

46) $\tan 78° = 4.7046$

Find each angle measure to the nearest degree (whole number).

47) $\cos U = 0.3907 \Rightarrow U = \cos^{-1}(0.3907) = 67°$

48) $\sin B = 0.7547 \Rightarrow B = \sin^{-1}(0.7547) = 49°$

49) $\cos A = 0.9962 \Rightarrow A = \cos^{-1}(0.9962) = 5°$

50) $\tan Z = 0.5317 \Rightarrow Z = \tan^{-1}(0.5317) = 28°$