EXERCISES FOR REAL NUMBER ARITHMETIC

Question 1 *In Exercises* **??** - **??**, *perform the indicated operations and simplify.*

Problem 1.1 $5-2+3$

6

Problem 1.2 $5-(2+3)=0$

Problem 1.3 $\frac{2}{3}-\frac{4}{7}$

$\frac{2}{21}$

Problem 1.4 $\frac{3}{8}+\frac{5}{12}=\frac{19}{24}$

Problem 1.5 $\frac{5-3}{-2-4}$

$-\frac{1}{3}$

Problem 1.6 $\frac{2(-3)}{3-(-3)}=-1$

Problem 1.7 $\frac{2(3)-(4-1)}{2^2+1}$

$\frac{3}{5}$

Problem 1.8 $\frac{4-5.8}{2-2.1}=18$

Problem 1.9 $\frac{1-2(-3)}{5(-3)+7}$

$-\frac{7}{8}$

Problem 1.10 $\frac{5(3)-7}{2(3)^2-3(3)-9}$

Undefined. (division by 0*.)*

Problem 1.11 $\frac{2((-1)^2-1)}{((-1)^2+1)^2}=0$

Problem 1.12 $\frac{(-2)^2-(-2)-6}{(-2)^2-4}$

Undefined. (division by 0*.)*

Problem 1.13 $\frac{3-\frac{4}{9}}{-2-(-3)}=\frac{23}{9}$

Problem 1.14 $\frac{\frac{2}{3}-\frac{4}{5}}{4-\frac{7}{10}}$

$-\frac{4}{99}$

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Problem 1.15 $\dfrac{2\left(\frac{4}{3}\right)}{1-\left(\frac{4}{3}\right)^2} = -\dfrac{24}{7}$

Problem 1.16 $\dfrac{1-\left(\frac{5}{3}\right)\left(\frac{3}{5}\right)}{1+\left(\frac{5}{3}\right)\left(\frac{3}{5}\right)}$

0

Problem 1.17 $\left(\dfrac{2}{3}\right)^{-5} = \dfrac{243}{32}$

Problem 1.18 $3^{-1} - 4^{-2}$

$\dfrac{13}{48}$

Problem 1.19 $\dfrac{1+2^{-3}}{3-4^{-1}} = \dfrac{9}{22}$

Problem 1.20 $\dfrac{3\cdot 5^{100}}{12\cdot 5^{98}}$

$\dfrac{25}{4}$

Problem 1.21 $\sqrt{3^2+4^2} = 5$

Problem 1.22 $\sqrt{12}-\sqrt{75}$

$-3\sqrt{3}$

Problem 1.23 $(-8)^{2/3} - 9^{-3/2} = \dfrac{107}{27}$

Problem 1.24 $\left(-\dfrac{32}{9}\right)^{-3/5}$

$-\dfrac{3\sqrt[5]{3}}{8} = -\dfrac{3^{6/5}}{8}$

Problem 1.25 $\sqrt{(3-4)^2+(5-2)^2} = \sqrt{10}$

Problem 1.26 $\sqrt{(2-(-1))^2+\left(\dfrac{1}{2}-3\right)^2}$

$\dfrac{\sqrt{61}}{2}$

Problem 1.27 $\sqrt{(\sqrt{5}-2\sqrt{5})^2+(\sqrt{18}-\sqrt{8})^2} = \sqrt{7}$

Problem 1.28 $\dfrac{-12+\sqrt{18}}{21}$

$\dfrac{-4+\sqrt{2}}{7}$

Problem 1.29 $\dfrac{-2-\sqrt{(2)^2-4(3)(-1)}}{2(3)} = -1$

Problem 1.30 $\dfrac{-(-4)+\sqrt{(-4)^2-4(1)(-1)}}{2(1)}$

$2+\sqrt{5}$

Problem 1.31 $2(-5)(-5+1)^{-1}+(-5)^2(-1)(-5+1)^{-2}$

$\dfrac{15}{16}$

Problem 1.32 $3\sqrt{2(4)+1}+3(4)\left(\dfrac{1}{2}\right)(2(4)+1)^{-1/2}(2) = 13$

Problem 1.33 $2(-7)\sqrt[3]{1-(-7)}+(-7)^2\left(\dfrac{1}{3}\right)(1-(-7))^{-2/3}(-1)$

$-\dfrac{385}{12}$

Problem 2 *With the help of your calculator, find* $(3.14\times 10^{87})^{117}$*. Write your final answer, using scientific notation, rounded to two decimal places. (See Example* **??***.)*

1.38×10^{10237}

Problem 3 *Prove the Quotient Rule and Power Rule stated in Theorem* **??***.*

Problem 4 *Discuss with your classmates how you might attempt to simplify the following.*

1. $\sqrt{\dfrac{1-\sqrt{2}}{1+\sqrt{2}}}$
2. $\sqrt[5]{3}-\sqrt[3]{5}$
3. $\dfrac{\pi+7}{\pi}$