MAT 099 §6.4 #s 3, 5, 7, 9, 11, 17, 21, 26, 27, 47, 49

#s 1–20 Divide

(3) $$\frac{12a^5b^2+16a^4b}{4a^4b} = \frac{4a^4b(3ab+4)}{4a^4b} = \boxed{3ab+4}$$

OR $$= \frac{12a^5b^2}{4a^4b} + \frac{16a^4b}{4a^4b} = 3ab+4$$

(5) $$\frac{4x^2y^2+6xy^2-4y^2}{2x^2y} = \frac{4x^2y^2}{2x^2y} + \frac{6xy^2}{2x^2y} - \frac{4y^2}{2x^2y}$$

$$= \boxed{2y + \frac{3y}{x} - \frac{2y}{x^2}}$$

(7) $(x^2+3x+2) \div (x+2) = \boxed{x+1}$

$$\begin{array}{r l}
 & x+1 \quad r\ 0 \\
x+2 & \overline{)\,x^2+3x+2} \\
 & -(x^2+2x) \\
\hline
 & x+2 \\
 & -(x+2) \\
\hline
 & 0
\end{array}$$

$$\begin{array}{r|rrr}
-2 & 1 & 3 & 2 \\
 & & -2 & -2 \\
\hline
 & 1 & 1 & 0 \\
 & x & c & r
\end{array}$$

(9) $(2x^2-6x-8) \div (x+1) = \boxed{2x-8}$

$$\begin{array}{r l}
 & 2x-8 \quad r\ 0 \\
x+1 & \overline{)\,2x^2-6x-8} \\
 & -(2x^2+2x) \\
\hline
 & -8x-8 \\
 & (-8x-8) \\
\hline
 & 0
\end{array}$$

$$\begin{array}{r|rrr}
-1 & 2 & -6 & -8 \\
 & & -2 & 8 \\
\hline
 & 2 & -8 & 0
\end{array}$$

MAT 099 §6.4 #s 11, 17, 21, 26, 27, 47, 49

(11) $(2x^2+3x-2) \div (2x+4) = \boxed{x - \frac{1}{2}}$

$$\begin{array}{r} x - \frac{1}{2} \quad r\ 0 \\ 2x+4 \overline{\left)\, 2x^2+3x-2 \right.} \\ -(2x^2+4x \qquad) \\ \hline -x-2 \\ -(-x-2) \\ \hline 0 \end{array}$$

(17) $(3x^5 - x^3 + 4x^2 - 12x - 8) \div (x^2-2) = \boxed{3x^3+5x+4 + \frac{-2x}{x^2-2}}$

$$\begin{array}{r} 3x^3 + 5x + 4 \quad r\ -2x \\ x^2-2 \overline{\left)\, 3x^5+0x^4-x^3+4x^2-12x-8 \right.} \\ -(3x^5 \qquad -6x^3 \qquad\qquad\qquad) \\ \hline 5x^3+4x^2-12x-8 \\ -(5x^3 \qquad -10x) \\ \hline 4x^2-2x-8 \\ -(4x^2 \qquad -8) \\ \hline -2x \end{array}$$

#s 21 - 28 use synthetic Division to divide.

(21) $\frac{x^2+3x-40}{x-5} = \boxed{x+8}$

$$\begin{array}{c|ccc} 5 & 1 & 3 & -40 \\ & & 5 & 40 \\ \hline & 1 & 8 & 0 \\ & x & c & r \end{array}$$

MAJ 099 § 6.4 #s 26, 27, 47, 49

26 $\dfrac{x^3+6x^2+4x-7}{x+5} = \boxed{x^2+x-1+\dfrac{-2}{x+5}}$

$$\begin{array}{r|rrrr} -5 & 1 & 6 & 4 & -7 \\ & & -5 & -5 & 5 \\ \hline & 1 & 1 & -1 & -2 \\ & x^2 & x & c & r \end{array}$$

27 $\dfrac{4x^2-9}{x-2} = \boxed{4x+8+\dfrac{7}{x-2}}$

$$\begin{array}{r|rrr} 2 & 4 & 0 & -9 \\ & & 8 & 16 \\ \hline & 4 & 8 & 7 \\ & x & c & r \end{array}$$

#s 47-56 Use the Remainder Theorem to find P(c) for the given polynomial, P(x).

47 $P(x)=x^3+3x^2-7x+4$, $c=1$.

Want $P(1)$;

$$\begin{array}{r|rrrr} 1 & 1 & 3 & -7 & 4 \\ & & 1 & 4 & -3 \\ \hline & 1 & 4 & -3 & \boxed{1 = P(1)} \end{array}$$

49 $P(x)=3x^3-7x^2-2x+5$ Find $P(-3)$

$$\begin{array}{r|rrrr} -3 & 3 & -7 & -2 & 5 \\ & & -9 & 48 & -138 \\ \hline & 3 & -16 & 46 & -133 \end{array}$$

$\boxed{P(-3) = -133}$