Long Division of Polynomials

Recall the division algorithm: $\frac{P(x)}{d(x)} = q(x) + \frac{r(x)}{d(x)}$

Determine $\frac{P(x)}{d(x)}$. If $d(x)$ is not a factor express your answer using the division algorithm. If $d(x)$ is a factor, then rewrite $P(x)$ in completely factored form.

1. $P(x) = 2x^4 - 3x^3 + 2x - 5$
   & $d(x) = x + 1$

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We can also rewrite P(x) as $P(x) = q(x) \bullet d(x) + r(x)$

Rewrite P(x) for the example above.

Since the remainder is ___, x + 1 _____ a factor.

2. $P(x) = x^3 + 2x^2 - 4x - 8$
   & $d(x) = x + 2$

3. $P(x) = x^3 - 4x^2 - 7x + 10$
   & $d(x) = x - 1$