3 Find the quotient and remainder

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a)

$$3x^2 - 7x + 15$$
$$\overline{)\,3x^3 - x^2 + x - 2}$$
$$3x^3 + 6x^2$$
$$- \quad -$$
$$-7x^2 + x$$
$$-7x^2 - 14x$$
$$+ \quad +$$
$$+15x - 2$$
$$+15x + 30$$
$$- \quad -$$
$$-32$$

Quotient $= 3x^2 - 7x + 15$

Remainder $= -32$

b)

$$3x - 1$$
$$x^2 \overline{)\,3x^3 - x^2 + x - 2}$$
$$3x^2$$
$$-$$
$$-x^2$$
$$-x^2$$
$$+0 + x - 2$$

Quotient $= 3x - 1$

Remainder $= x - 2$

C)

$$5x^2 - 11$$
$$x^2 + 2 \overline{)\,5x^4 - x^2 + x - 2}$$
$$5x^4 + 10x^2$$
$$- \quad -$$
$$-11x^2 + x - 2$$
$$-11x^2 \quad -22$$
$$+ \quad +$$
$$+x + 20$$

quotient $= 5x^2 - 11$

Remainder $= x + 20$

D)

$$x^2$$
$$3x^3 - 1 \overline{)\,3x^5 - x^2 + x - 2}$$
$$3x^5 - x^2$$
$$- \quad +$$
$$0 + 0 + x - 2$$

quotient $= x^2$

Remainder $= x - 2$