November 2, 2015

#8) $h(x) = \sqrt[3]{(x+1)^2}$

$f(x) = \sqrt[3]{x}$

$g(x) = (x+1)^2$

$(f \circ g)(x) = f(g(x)) = h(x)$

$= \sqrt[3]{g(x)}$

$= \sqrt[3]{(x+1)^2} = h(x)$ ✓

Nov 2-11:01 AM

Long Division of Polynomials

① Division by a monomial

$$\frac{4x^3 - 9x^2 + 8x - 11}{-2x^3} \leftarrow \text{monomial}$$

$$\frac{4\boxed{x^3}}{-2\boxed{x^3}} - \frac{9\cancel{x^2}}{-2x^{\cancel{3}\,1}} + \frac{8\cancel{x}}{-2x^{\cancel{3}\,2}} - \frac{11}{-2x^3}$$

$$\boxed{-2 + \frac{9}{2x} - \frac{4}{x^2} + \frac{11}{2x^3}}$$

$$\frac{6x + 3}{3} = \frac{6x}{3} + \frac{3}{3}$$

$$= 2x + 1$$

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$$\frac{19}{4}$$

$+4 \sim 3 \rightarrow 4\frac{3}{4}$

$+4 \,\big)\, +19$

$\cancel{+}16$

$\boxed{3}$ Remainder

Ck

$$4 \cdot \frac{3}{4} = \frac{(4 \cdot 4) + 3}{4}$$

$$= \frac{16 + 3}{4} = \frac{19}{4} \checkmark$$

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$$\frac{x^2 + 9x - 11}{x - 2} \leftarrow \text{Trinomial}$$

	x^2	x^1	$x^0 = 1$
$x - 2$	x^2	$+9x$	-11
	$\cancel{-}x^2$	$\cancel{+}2x$	
	0	$11x$	-11
		$\cancel{-}11x$	$\cancel{+}22$
		0	11 ← remainder

Steps

① $\frac{x^2}{x} = x^1$

② $x \cdot x = x^2$

③ $(-2) \cdot x$

④ $\frac{11x}{x} = 11$

⑤ $x \cdot 11 = 11x$

⑥ $(-2) \cdot 11 = -22$

$\boxed{\text{ans. } x + 11 \frac{11}{x-2}}$

Ck

$$\frac{(x+11)(x-2) + 11}{(x-2)}$$

$$\frac{x^2 - 2x + 11x - 22 + 11}{(x-2)}$$

$$\frac{x^2 + 9x - 11}{x - 2}$$

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	x^3	x^2	x^1	x^0
		$2x^2$	$-6x$	29
$x + 5$	$2x^3$	$+4x^2$	$-x$	$+8$
	$\cancel{-}2x^3$	$\cancel{-}10x^2$		
	0	$-6x^2$	$-x$	
		$\cancel{+}6x^2$	$\cancel{+}30x$	
		0	$+29x$	$+8$
			$\cancel{-}29x$	$\cancel{-}145$
			0	-137

$\frac{2x^3}{x} = 2x^2$

$x \cdot 2x^2 = 2x^3$

$5 \cdot 2x^2 = 10x^2$

$$\boxed{2x^2 - 6x + 29 - \frac{137}{x+5}}$$

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