12.3) Differentiating x^n

Worked example	Your turn
Differentiate with respect to x:	Differentiate with respect to x:
x^2	x^5
	$5x^4$
x^3	
x^4	

Worked example	Your turn
Differentiate with respect to x:	Differentiate with respect to x:
$3x^2$	$-3x^5$
$-2x^3$	$-15x^4$
$5x^4$	

Worked example	Your turn
Differentiate with respect to x:	Differentiate with respect to x:
$\sqrt{x}$	$\sqrt[5]{x}$
	$\frac{1}{5}x^{-\frac{4}{5}}$
$\sqrt[3]{x}$	
$\sqrt[4]{x}$	

Worked example	Your turn
Differentiate with respect to x:	Differentiate with respect to x:
$\frac{1}{x}$	$\frac{1}{x^4}$
	$-4x^{-5} = -\frac{4}{x^5}$
$\frac{1}{x^2}$	
$\frac{1}{x^3}$	

Worked example	Your turn
Differentiate with respect to x:	Differentiate with respect to x:
$\frac{2}{x}$	$\frac{7}{8x^4}$
	$-\frac{7}{2}x^{-5} = -\frac{7}{2x^5}$
$\frac{3}{4x^2}$	
$\frac{6}{5x^3}$	

Worked example	Your turn
Differentiate with respect to x: $\frac{2}{3}\sqrt{x}$ $\frac{4}{7}\sqrt[3]{x}$ $\frac{5}{6}\sqrt[4]{x}$	Differentiate with respect to x: $\frac{3}{5}\sqrt{x}$ $\frac{3}{10}x^{-\frac{1}{2}} = \frac{3}{10\sqrt{x}}$

Worked example	Your turn
Differentiate with respect to x:	Differentiate with respect to x:
$\frac{2}{3\sqrt{x}}$	$\frac{3}{5\sqrt{x}}$
	$-\frac{3}{10}x^{-\frac{3}{2}} = -\frac{3}{10x\sqrt{x}}$
$\frac{4}{7\sqrt[3]{x}}$	
$\frac{5}{6\sqrt[4]{x}}$	

Worked example	Your turn
Differentiate with respect to x:	Differentiate with respect to x:
$\sqrt{36x^7}$	$\sqrt{16x^8}$
	$16x^3$
$\sqrt{25}x^7$	$\sqrt{9}x^8$
	$24x^7$