13.1) Integrating x^n

Worked example	Your turn
Find $f(x)$, given that $f'(x) = x^2$	Find $f(x)$, given that $f'(x) = x^5$
	$y = \frac{1}{6}x^6 + c$
x^3	
x^4	

Worked example	Your turn
Find y, given that $\frac{dy}{dx} = 3x^2$	Find y, given that $\frac{dy}{dx} = -3x^5$
$-2x^3$	$y = -\frac{1}{2}x^6 + c$
$5x^4$	

Worked example	Your turn
Find $f(x)$, given that $f'(x) = \sqrt{x}$	Find $f(x)$, given that $f'(x) = \sqrt[5]{x}$
	$y = \frac{5}{6}x^{\frac{6}{5}} + c$
$\sqrt[3]{x}$	
$\sqrt[4]{x}$	

Worked example	Your turn
Find y, given that $\frac{dy}{dx} = \frac{1}{x^2}$ $\frac{2}{x^3}$	Find y, given that $\frac{dy}{dx} = \frac{3}{x^4}$ $y = -\frac{1}{x^3} + c$

Worked example	Your turn
Find $f(x)$, given that $f'(x) = \frac{3}{4x^2}$	Find $f(x)$, given that $f'(x) = \frac{7}{8x^4}$
$\frac{6}{5x^3}$	$y = -\frac{7}{24x^3} + c$

Worked example	Your turn
Find y, given that $\frac{dy}{dx} = \frac{2}{3}\sqrt{x}$	Find y, given that $\frac{dy}{dx} = \frac{3}{5}\sqrt{x}$
	$y = \frac{2}{5}x^{\frac{3}{2}} + c$
$\frac{4}{7}\sqrt[3]{x}$	$y = \frac{2}{5}x\sqrt{x} + c$
$\frac{5}{6}\sqrt[4]{x}$	

Worked example	Your turn
Find $f(x)$, given that $f'(x) = \frac{2}{3\sqrt{x}}$	Find $f(x)$, given that $f'(x) = \frac{3}{5\sqrt{x}}$
	$y = \frac{6}{5}x^{\frac{1}{2}} + c$
	$y = \frac{6}{5}\sqrt{x} + c$
$\frac{4}{7\sqrt[3]{x}}$	
$\frac{5}{6\sqrt[4]{x}}$	

Worked example	Your turn
Find y, given that $\frac{dy}{dx} = \sqrt{36x^7}$	Find y, given that $\frac{dy}{dx} = \sqrt{16x^8}$
	$y = \frac{4}{5}x^5 + c$
$\sqrt{25}x^7$	$\sqrt{9}x^8$
	$y = \frac{1}{3}x^9 + c$

Worked example	Your turn
Find $f(x)$, given that $f'(x) = 2x^{-\frac{7}{10}}$	Find $f(x)$, given that $f'(x) = 10x^{-\frac{2}{7}}$ $y = 14x^{\frac{5}{7}} + c$

Worked example	Your turn
Find y, given that $\frac{dy}{dx} = 39x^{\frac{5}{8}}$	Find y, given that $\frac{dy}{dx} = 33x^{\frac{5}{6}}$ $y = 18x^{\frac{11}{6}} + c$

Worked example	Your turn
Find $f(x)$, given that $f'(x) = (3x-2)^2$	Find $f(x)$, given that $f'(x) = (2x-3)^2$ $y = \frac{4}{3}x^3 - 6x^2 + 9x + c$