

7.1 Hw Questions Integration by parts

(35) $\int (3x-4) \sqrt{2x-1} dx$

Step 1 $u = 2x-1$ } we are short we have an
 $du = 2dx$ } extra (x) inside

D
 $3x-4$

I
 $(2x-1)^{1/2}$

3

$\frac{1}{2} \cdot \frac{2}{3} (2x-1)^{3/2} = \frac{1}{3} (2x-1)^{3/2}$

$\int \emptyset$

~~$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{2}{3} \cdot \frac{2}{5} (2x-1)^{5/2} =$~~

$\frac{1}{3} \cdot \frac{1}{2} \cdot \frac{2}{5} (2x-1)^{5/2}$

carry this down
 then multiply by $1/2$ and
 add $+1$, divide by new
 power.

Note: ^{1st part} $\frac{1}{2} \cdot \frac{2}{3} (2x-1)^{3/2}$

^{2nd part} $\frac{1}{2} \cdot \frac{2}{3} (2x-1)^{5/2} \cdot \frac{2}{5} \cdot \frac{1}{2}$

$\frac{1}{2} \cdot \frac{2}{3} \cdot \frac{2}{5} \cdot \frac{1}{2} (2x-1)^{7/2} \cdot \frac{2}{7} \cdot \frac{1}{2}$

SO D

(+) $(3x-4)$

I

$(2x-1)^{1/2}$

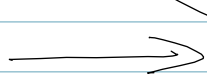
(-)

3

$\frac{1}{2} \cdot \frac{2}{3} (2x-1)^{3/2} = \frac{1}{3} (2x-1)^{3/2}$

(+)

$\int \emptyset$



$\frac{1}{2} \cdot \frac{2}{3} (2x-1)^{5/2} \cdot \frac{1}{3} = \frac{1}{15} (2x-1)^{5/2}$

$$= \frac{1}{3}(3x-4)(2x-1)^{3/2} - \frac{1}{5}(2x-1)^{5/2} + C$$

$$= \frac{1}{3}(3x-4)(2x-1)^{3/2} - \frac{1}{5}(2x-1)^{5/2} + C$$

(47) $\int 2x \frac{|x-3|}{x-3} dx \Rightarrow \int x \frac{|x|}{x} \text{ or } x \frac{|x-a|}{x-a}$

Shortcut I'd be looking for

But this format not there,

but I do see shortcut formula $\int \frac{|x-a|}{x-a}$, but

have extra (2x) so use integration by parts

D

I

(+) 2x

$\frac{|x-3|}{x-3}$

See page 524 table shortcut says

$$\int \frac{|ax+b|}{ax+b} dx = \frac{1}{a} |ax+b| + C$$

(-) 2

$\frac{1}{1} |x-3| = |x-3|$

(+) \emptyset

$\frac{1}{2} (x-3) |x-3|$

so $a=1; b=-3$

$$\int |x| dx = \frac{1}{2} x |x| + C$$

$$\int |ax+b| dx = \frac{1}{2a} (ax+b) |ax+b| + C$$