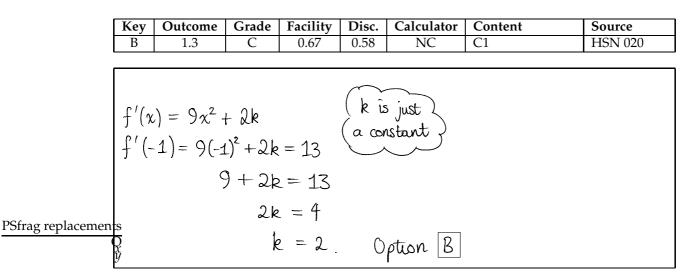
Ο

 $_{y}^{x}$ Quest

Higher Mathematics

Differentiation Ass 1 Obj

- 1. A function *f* is defined by $f(x) = 3x^3 + 2kx + 9$. Given that f'(-1) = 13, what is the value of *k*?
 - A. $-\frac{7}{2}$
 - B. 2
 - C. 5
 - D. 11



2. Given $f(x) = 3x^3 + 7x + 1$, find the rate of change of f when x = 2.

A.	28
B.	31
C.	39
D.	43

Key

Outcome

Grade

2

2

	D	1.3	С	0.53	0.56	NC	C1, C1	HSN 024
	_							
PSfrag replacemen	f'(a)	$(x) = 9\chi^{2}_{1} +$	7					
PSfrag replacement	s (o, , , , , , , ,	•.					_
	x f'(z)	$(2)^{2} = 9(2)^{2}$	+7 =	9x4+-	7 = 36	+7 = 43	. Option D	
	y) (°		•			., -		

Disc.

Calculator

Content

Facility

replacements

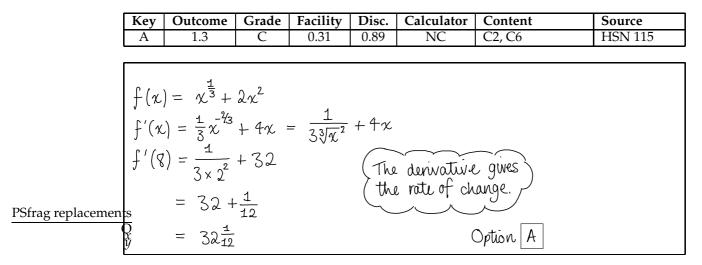
O *x y* **bsn**.uk.net Source

- 3. Differentiate $2\sqrt[3]{x}$ with respect to *x*.
 - A. $6\sqrt{x}$ B. $\frac{3}{2}\sqrt[3]{x^4}$ C. $-\frac{4}{3\sqrt[3]{x^2}}$

D.
$$\frac{2}{3\sqrt[3]{x^2}}$$

	Key	Outcome	Grade	Facility	Disc.	Calculator	Content	Source		
	D	1.3	С	0.83	0.38	NC	C2, C3	HSN 091		
		، ډ								
	$2\sqrt[3]{\chi} = 2\chi^{1/3}$									
PSfrag replacemen	<u>s</u> d ydx($2x^{4/3}) =$	$\frac{1}{3} \times 2 x^{-2}$	$\sqrt{3} = \frac{2}{3\sqrt{3}}$			Option D			

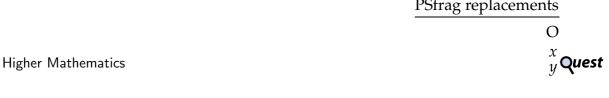
- 4. Given that $f(x) = \sqrt[3]{x} + 2x^2$, what is the rate of change of f when x = 8?
 - A. $32\frac{1}{12}$
 - B. $32\frac{1}{6}$
 - C. $32 + 3\sqrt{2}$
 - D. 130



replacements

2

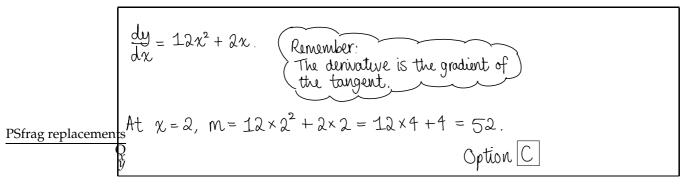
2



5. What is the gradient of the tangent to the curve $y = 4x^3 + x^2 + 3$ at x = 2?

- A. $24\frac{2}{3}$
- B. 39
- C. 52
- D. 55

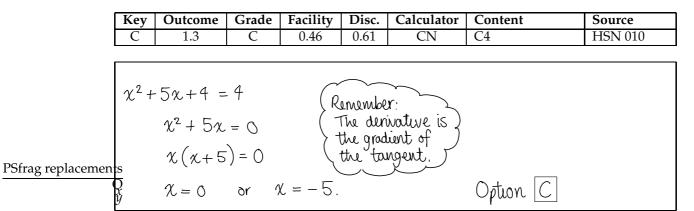
Key	Outcome	Grade	Facility	Disc.	Calculator	Content	Source
С	1.3	С	0.53	0.69	NC	C4	HSN 02



6. A curve has
$$\frac{dy}{dx} = x^2 + 5x + 4$$
.

Find the *x*-values of the points on the curve where the tangent has a gradient of 4.

- A. -4 and -1
- B. 1 and 4
- $C. \quad -5 \text{ and } 0$
- D. 0 and 5



replacements

2

2

7. A function is defined by $f(x) = 2x^2 - 9x + 4$.

What is the largest range of *x*-values for which f(x) is strictly increasing?

- A. $x < \frac{9}{4}$ B. $x > \frac{9}{4}$
- $\mathbf{D}. \quad x > \frac{1}{4}$
- C. $\frac{1}{2} < x < 4$
- D. $x < \frac{1}{2}, x > 4$



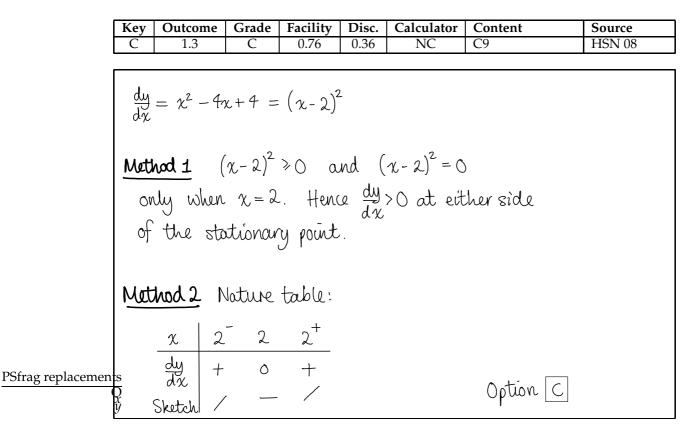
	Key	Outcome	Grade	Facility	Disc.	Calculator	Content	Source			
	В	1.3	С	0.45	0.59	CN	C7	HSN 172			
	.										
	f'(x) = 4x - 9. f is strictly increasing when $f'(x) > 0$ $4x - 9 > 0$										
	f is strictly increasing when $f'(x) > 0$										
	4										
PSfrag replacement	s				Тχ-	9 - 0					
	<u>Ç</u>					$\chi > \frac{9}{4}$	Option B				
	Ŷ					·L - 4.	Option				



Higher Mathematics

What is the nature of this stationary point?

- A. maximum turning point
- B. minimum turning point
- C. rising point of inflexion
- D. falling point of inflexion



[END OF QUESTIONS]

replacements



 O_{y}^{x} Quest