

Chapter 3 “MCQ QR codes”

Task Solve the first four MCQ below and select the corresponding QR code pieces on the next page. Cut and stick the four pieces together, then scan it. You'll find a final question (harder). Repeat with the other four MCQ. The answers to the two “final questions” combine together to form one drawing. What is it?

MCQ A1

If $f(x) = e^{2x}(x^3 + 1)$, then $f'(2) =$

- (A) $6e^4$ (B) $21e^4$ (C) $24e^4$ (D) $30e^4$

MCQ A2

The function f is defined by $f(x) = x^3 + 4x + 2$. If g is the inverse function of f and $g(2) = 0$, what is the value of $g'(2)$?

- (A) $-\frac{1}{16}$ (B) $-\frac{4}{81}$ (C) $\frac{1}{4}$ (D) 4

MCQ A3

$\lim_{x \rightarrow e} \frac{(x^{20} - 3x) - (e^{20} - 3e)}{x - e}$ is

- (A) 0 (B) $20e^{19} - 3$ (C) $e^{20} - 3e$ (D) nonexistent

MCQ A4

The function g is defined by $g(x) = x^2 + bx$, where b is a constant. If the line tangent to the graph of g at $x = -1$ is parallel to the line that contains the points $(0, -2)$ and $(3, 4)$, what is the value of b ?

- (A) -1 (B) 2 (C) $\frac{5}{2}$ (D) 4

MCQ B1

If $f(x) = \sin^{-1}x$, then $f'\left(\frac{\sqrt{3}}{2}\right) =$

- (A) $\frac{\pi}{6}$ (B) $\frac{\pi}{3}$ (C) $\frac{4}{7}$ (D) 2

MCQ B2

$$f(x) = \begin{cases} 6 + cx & \text{for } x < 1 \\ 9 + 2 \ln x & \text{for } x \geq 1 \end{cases}$$

Let f be the function defined above, where c is a constant. If f is continuous at $x = 1$, what is the value of c ?

- (A) 2 (B) 3 (C) 5 (D) 9

MCQ B3

$\lim_{x \rightarrow 3} \frac{\tan(x - 3)}{3e^{x-3} - x}$ is

- (A) 0 (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) nonexistent

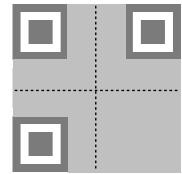
MCQ B4

Let $y = f(x)$ be a twice-differentiable function such that $f(1) = 2$ and $\frac{dy}{dx} = y^3 + 3$. What is the value of $\frac{d^2y}{dx^2}$ at $x = 1$?

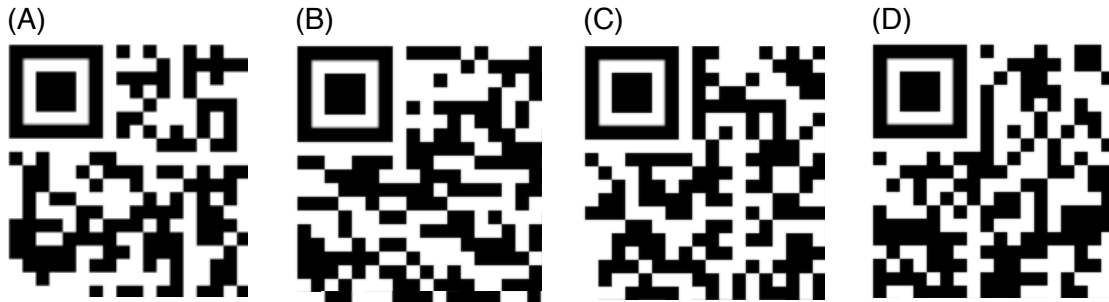
- (A) 12 (B) 66 (C) 132 (D) 165

Answer options sheet

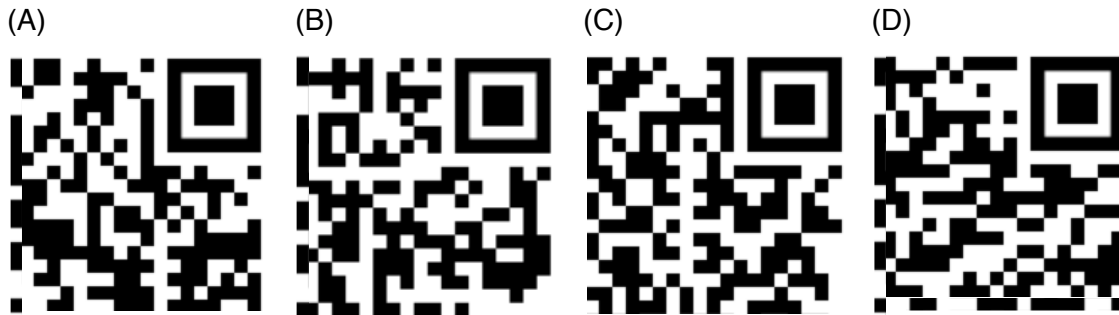
Use scissors to cut out the right answers and place the pieces together to form the correct QR code. Then scan it. For the two final questions, you'll get two parts of a drawing. Lay them on top of each other. What does it represent?



Answers A1



Answers A2



Answers A3



Answers A4



Answers B1

(A)



(B)



(C)



(D)



Answers B2

(A)



(B)



(C)



(D)



Answers B3

(A)



(B)



(C)



(D)



Answers B4

(A)



(B)



(C)



(D)

