
东华理工大学 2017 年硕士生入学考试初试试题

601 ;

A

8

4

32

1 $\lim_{x \rightarrow 0} \frac{(1+2x)^{\sin x} - \cos x}{\sin x^2} =$

A 1

B $\frac{3}{2}$

C 2

D $\frac{5}{2}$

2 $\{a_n\} \quad \lim_{n \rightarrow \infty} \frac{a_{n+1}}{a_n} = 0$

A $\lim_{n \rightarrow \infty} a_n = 0$;

B $\lim_{n \rightarrow \infty} a_n = C > 0$;

C $\lim_{n \rightarrow \infty} a_n$;

D $\{a_n\}$

3 $\lim_{x \rightarrow 0} \frac{f(2x) - f(0)}{\ln(1+3x)} = 1 \quad f'(0) \quad (\quad)$

A.1

B. $\frac{3}{2}$

C.2

D. $\frac{5}{2}$

4 $\lim_{x \rightarrow a} \frac{f(x) - f(a)}{(x-a)^2} = -1, \quad x = a(\quad)$

A $f(x)$;

B $f(x)$;

C $f(x)$, ;

D $f(x)$

5 $\lim_{\substack{x \rightarrow 0 \\ y \rightarrow 0}} \frac{x^2 y}{x^4 + y^2} =$

A.0

B.

C.

0 $\frac{1}{2}$

D. $\frac{1}{2}$

6 $D\{(x, y) | x^2 + y^2 \leq 4, x \geq 0, y \geq 0\}$, $f(x) = a$, $f(y) = b$, $a, b > 0$

$$\iint_D \frac{a\sqrt{f(x)} + b\sqrt{f(y)}}{\sqrt{f(x)} + \sqrt{f(y)}} d\sigma = (\quad)$$

- A $ab\pi$; B $\frac{ab}{2}\pi$; C $(a+b)\pi$; D $\frac{a+b}{2}\pi$

7
$$\begin{cases} 5x + y - 3z - 7 = 0 \\ 2x + y - 3z - 7 = 0 \end{cases}$$

- A. yz B. x C. yz D. xoy

8 $y'' - 2yy'^3 = 0$ $y'(0) = -1, y(0) = 1$ ()

- A. $\frac{y^3}{3} = x + \frac{1}{3}$ B. $\frac{x^3}{3} = y - 1$ C. $\frac{y^3}{3} = -x + \frac{1}{3}$ D. $\frac{x^3}{3} = -y + 1$

6 4 24

9 $y = y(x)$ $\sin(xy) + 3x + y = 1$, $dy|_{x=0} = \underline{\hspace{2cm}}$

10 $y = \lim_{x \rightarrow \infty} t(1 + \frac{1}{x})^{2tx}$, $x = t^2 + t$ $\frac{dy}{dx} = \underline{\hspace{2cm}}$.

11 $\int_{-\frac{1}{2}}^{\frac{1}{2}} \sin x^2 \cdot \ln \frac{1+x}{1-x} dx = \underline{\hspace{2cm}}$

12 $x^2 + 4x^6 - 1 = 0$ $\underline{\hspace{2cm}}$

13
$$\begin{cases} x = 1 \\ y = -1 + t \\ z = 2 + t \end{cases}, \quad \frac{x+1}{1} = \frac{y+2}{2} = \frac{z-1}{1} \quad \underline{\hspace{2cm}}$$

14 D $y = \sqrt{x}$ $y = x$ $\iint_D \frac{\sin y}{y} d\sigma = \underline{\hspace{2cm}}$.

(15) (22) 94 .

15 11
: $x \geq 1$, $2 \arctan x + \arcsin \frac{2x}{1+x^2} = \pi$.
