Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following points lie on the line with parametric equations**

**x = 2+4t; y = 3-7t; z = 5t?**

**P(10; -11; 10); Q(-2; 4; 5); R(-2; 10; -5)**

Select one:

a. P and R

b. P and Q

c. None of the other choices is correct

d. Q

e. P, Q and R

Feedback

The correct answer is: P and R

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If u = (3, 3, 6) and v = (2, -1, 1), then the length of the projection of u along v is:**

Select one:

a. [\frac{2\sqrt6}{3}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%5Csqrt6%7D%7B3%7D)

b. 0

c. [\frac{3\sqrt6}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B3%5Csqrt6%7D%7B2%7D)

d. [\frac{\sqrt6}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt6%7D%7B2%7D)

e. [\frac{3\sqrt2}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B3%5Csqrt2%7D%7B2%7D)

Feedback

The correct answer is: [\frac{3\sqrt6}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B3%5Csqrt6%7D%7B2%7D)

Question **3**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let the point P(-1, -1, 2). Find the shortest distance from the point P to the line**

**[x  y  z]T = [1  1  0]T+t[2  -1  -1]T.**

Select one:

a. [\sqrt{\frac{38}{3}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B%5Cfrac%7B38%7D%7B3%7D%7D)

b. None of the other choices is correct

c. [\sqrt{\frac{38}{6}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B%5Cfrac%7B38%7D%7B6%7D%7D)

d. [\sqrt{\frac{28}{3}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B%5Cfrac%7B28%7D%7B3%7D%7D)

e. [\sqrt{\frac{28}{6}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B%5Cfrac%7B28%7D%7B6%7D%7D)

Feedback

The correct answer is: [\sqrt{\frac{28}{3}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B%5Cfrac%7B28%7D%7B3%7D%7D)

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Consider the points A(1; 2; 3); B(1; 3; 2) and C(2; 1; 3). Find a point D on the Z-axis so that**

**the volume of the tetrahedron ABCD is 3.**

Select one:

a. (0, 0, -15)

b. (0, 0, -6)

c. (0, 0 -12)

d. (0, 0, 2)

e. (0, 0, 18)

Feedback

The correct answer is: (0, 0 -12)

Question **5**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the area of the triangle with vertices A(1, 2, 1); B(3; 2, 1), C(0, 5, 2).**

Select one:

a. 20

b. [\sqrt{40}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B40%7D)

c. None of the other choices is correct

d. [\sqrt{10}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B10%7D)

Feedback

The correct answer is: [\sqrt{10}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B10%7D)

Question **6**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let u = (u1, u2, u3); v = (v1, v2, v3); w = (w1, w2, w3). Which of the following statements are false?**

**(i)****[[(u\times v).v = 0](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%28u%5Ctimes%20v%29.v%20%3D%200)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%28u%5Ctimes%20v%29.v%20%3D%200" \o "TeX).**

**(ii)****[[\mid\mid u\times v\mid\mid = \mid\mid u\mid\mid.\mid\mid v\mid\mid.cos\theta](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cmid%5Cmid%20u%5Ctimes%20v%5Cmid%5Cmid%20%3D%20%5Cmid%5Cmid%20u%5Cmid%5Cmid.%5Cmid%5Cmid%20v%5Cmid%5Cmid.cos%5Ctheta)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cmid%5Cmid%20u%5Ctimes%20v%5Cmid%5Cmid%20%3D%20%5Cmid%5Cmid%20u%5Cmid%5Cmid.%5Cmid%5Cmid%20v%5Cmid%5Cmid.cos%5Ctheta" \o "TeX), where****[[\theta](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctheta)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctheta" \o "TeX)is an angle beetween****[[u](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=u)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=u" \o "TeX)and****[[v](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=v)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=v" \o "TeX).**

**(iii)****[(u\times v).w =det \left[\begin{array}{ccc}w_{1}& w_{2}& w_{3} \\ u_{1}& u_{2}& u_{3}\\v_{1}& v_{2}& v_{3} \end{array} \right] ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%28u%5Ctimes%20v%29.w%20%3Ddet%20%5Cleft%5B%5Cbegin%7Barray%7D%7Bccc%7Dw_%7B1%7D%26%20w_%7B2%7D%26%20w_%7B3%7D%20%5C%5C%20u_%7B1%7D%26%20u_%7B2%7D%26%20u_%7B3%7D%5C%5Cv_%7B1%7D%26%20v_%7B2%7D%26%20v_%7B3%7D%20%5Cend%7Barray%7D%20%5Cright%5D%20)**

Select one:

a. (i) and (iii)

b. None of the other choices is correct

c. (ii)

d. (ii) and (iii)

e. (i)

Feedback

The correct answer is: (ii)

Question **7**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let T be reflection in the line y = 2x followed by rotation through****[[\frac{\pi}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Cpi%7D%7B2%7D)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Cpi%7D%7B2%7D" \o "TeX). Find T[x y].**

Select one:

a. None of the other choices is corrrect

b. (1/5)[4x+3y; -3x+4y]

c. (1/5)[-4x-3y; -3x+4y]

d. (1/5)[4x-3y; -3x-4y]

e. (1/5)[-4x+3y; 3x+4y]

Feedback

The correct answer is: (1/5)[-4x-3y; -3x+4y]

Question **8**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Determine whether x = (-2, -6, -4) lies in U = span{u=(2, 4, 3); v=(1, 1,1)}. If so, write x = a.u+b.v and find a+b.**

Select one:

a. a+b=2

b. a+b=3

c. a+b=0

d. a+b= -2

e. it does not lie in U.

Feedback

The correct answer is: a+b=0

Question **9**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following are subspaces of R3?**

**(i) {(x, y, z)| xz > 0 or xz = 0}**

**(ii){(x, y, z)| x=y}**

Select one:

a. (i) only

b. None of the other choices is correct

c. (i) and (ii)

d. (ii) only

Feedback

The correct answer is: (ii) only

Question **10**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let U = {[x, y, z]| x - 2y + z = 0, x + y - z = 0}. Which of the following is a basis for U?**

Select one:

a. {[1, 2, 3], [2, 4, 6]}

b. {[1, 2, 3]}

c. {[1, -1, 1]}

d. {[1, -1, 1], [0, 1, 1]}

e. None of the other choices is correct

Feedback

The correct answer is: {[1, 2, 3]}

Question **11**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = {[x+2y+3z, -2x-4y-6z, 5x+10y+15z]| x, y, z are real numbers}.**

Select one:

a. 3

b. 1

c. None of the other choices is true

d. 2

Feedback

The correct answer is: 1

Question **12**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Find all values of x such that { [1, 1, 2, [-2, x, 1], [2, -1, 1]} is linearly independent**

Select one:

a. all numbers but 2

b. 3

c. 2

d. None of the other choices is correct

e. all numbers but 3

Feedback

The correct answer is: all numbers but 3

Question **13**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find a so that B = {(****[\frac{1}{\sqrt3}, \frac{1}{\sqrt3},\frac{1}{\sqrt3}), (-\frac{1}{\sqrt2},\frac{1}{\sqrt2},0) ,(a,b,c)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt3%7D%2C%20%5Cfrac%7B1%7D%7B%5Csqrt3%7D%2C%5Cfrac%7B1%7D%7B%5Csqrt3%7D%29%2C%20%28-%5Cfrac%7B1%7D%7B%5Csqrt2%7D%2C%5Cfrac%7B1%7D%7B%5Csqrt2%7D%2C0%29%20%2C%28a%2Cb%2Cc%29)} is an orthonormal set.**

Select one:

a. a = 1 or -1

b. [ a = \frac{1}{\sqrt6}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%20a%20%3D%20%5Cfrac%7B1%7D%7B%5Csqrt6%7D)or [-\frac{1}{\sqrt6} ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=-%5Cfrac%7B1%7D%7B%5Csqrt6%7D%20)

c. none of the other choices is true

d. [ a = \frac{1}{\sqrt3} ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%20a%20%3D%20%5Cfrac%7B1%7D%7B%5Csqrt3%7D%20)or [-\frac{1}{\sqrt3} ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=-%5Cfrac%7B1%7D%7B%5Csqrt3%7D%20)

Feedback

The correct answer is: [ a = \frac{1}{\sqrt6}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%20a%20%3D%20%5Cfrac%7B1%7D%7B%5Csqrt6%7D)or [-\frac{1}{\sqrt6} ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=-%5Cfrac%7B1%7D%7B%5Csqrt6%7D%20)

Question **14**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace spanned by the vectors  
  
{[1, 1, 1], [-1, 1, -1], [1, 1, 3], [0, 2, 1]}**

Select one:

a. 1

b. 3

c. 4

d. 2

Feedback

The correct answer is: 3

Question **15**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**If A is a 7 × 9 matrix has rank 5, find dim(Col(A)), dim(Null(A))**

Select one:

a. None of the other choices is correct

b. dim(col(A))=4, dim(null(A))=5

c. dim(col(A))=5, dim(null(A))=4

d. dim(col(A))=4, dim(null(A))=2

e. dim(col(A))=5, dim(null(A))=2

Feedback

The correct answer is: dim(col(A))=5, dim(null(A))=4

Question **1**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let P(1,2,1), Q(1,0,-1), R(2,2,0) be the vertices of a parallelogram with adjacent sides RP and RQ. Find the other vertex S.**

Select one:

a. (2, -1, -2)

b. None of the other choices is correct

c. (0, 2, 2)

d. (-2, -2, 0)

e. (-2, 1, 2)

Feedback

The correct answer is: None of the other choices is correct

Question **2**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**if || X || = 2, || Y || =1 and || X-3Y || = 4, compute X.Y**

Select one:

a. 

b. [\frac{-1}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B2%7D)

c. none of the other choice is true

d. [\frac{1}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B2%7D)

e. [\frac{2}{3}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B3%7D)

Feedback

The correct answer is: [\frac{-1}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B2%7D)

Question **3**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let Q be the point on the line x = 1+t, y = -2 + 3t, z = 1 - t that is closet to the point P(1,0,1). Find the first coordinate of Q.**

Select one:

a. 7/11

b. 5/9

c. None of the other choices is correct

d. 18/11

e. 14/9

Feedback

The correct answer is: None of the other choices is correct

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the area of the triangle with the following vertices A(1, 1, -1), B(2, 0, 1), C(1, -1, 3).**

Select one:

a. 1

b. [\sqrt5](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt5)

c. 2

d. none of the other choices is true

e. [\sqrt{20}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B20%7D)

Feedback

The correct answer is: [\sqrt5](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt5)

Question **5**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (1; 1; 1); v = (0; 1; 1) and w = (1; 0; 1). Find the length of x = (3u + v)****[[\times](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctimes)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctimes" \o "TeX)w.**

Select one:

a. [\sqrt{33}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B33%7D)

b. [\sqrt{43}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B43%7D)

c. [\sqrt{13}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B13%7D)

d. none of the other choices is true

e. [\sqrt{23}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B23%7D)

Feedback

The correct answer is: [\sqrt{33}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B33%7D)

Question **6**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**The volume of the pyramid with vertices (0 ; 0 ; 0) ; ( - 1 ; 8 ; 1) ; ( -16 ; 0 ; 1) and (2 ; 0 ;-2) is:**

Select one:

a. None of the other choices is correct

b. 40

c. 240

d. 80

e. 120

Feedback

The correct answer is: 40

Question **7**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let****[[T:R^2\rightarrow R^2](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E2%5Crightarrow%20R%5E2)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E2%5Crightarrow%20R%5E2" \o "TeX)be projection on the line y = 2x followed by reflection in the x-axis and let the vector v = [1   1]T. Find T(v).**

Select one:

a. [](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cleft%5B%5Cfrac%7B3%7D%7B5%7D%20%5C%5C%5C%20%5Cfrac%7B-6%7D%7B5%7D%5Cright%5D%5E%7BT%7D)

b. None of the other choices is correct

c. [](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cleft%5B%5Cfrac%7B4%7D%7B5%7D%20%5C%5C%5C%20%5Cfrac%7B-6%7D%7B5%7D%5Cright%5D%5E%7BT%7D)

d. [](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cleft%5B%5Cfrac%7B1%7D%7B5%7D%20%5C%5C%5C%20%5Cfrac%7B-7%7D%7B5%7D%5Cright%5D%5E%7BT%7D)

Feedback

The correct answer is: [](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cleft%5B%5Cfrac%7B3%7D%7B5%7D%20%5C%5C%5C%20%5Cfrac%7B-6%7D%7B5%7D%5Cright%5D%5E%7BT%7D)

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If x = au1 +bu2 then find a+b.  
  
u1 = [2, -4] , u2 = [12, 6], x =[-26, -38]**

Select one:

a. -2

b. 0

c. -1

d. 1

e. 2

Feedback

The correct answer is: 2

Question **9**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Which of the following are subspaces of R3 ?  
  
(i) {(x, y, z)| x2+y2=0}  
  
(ii) {(x, 2y, x+2)| x, y are real numbers }**

Select one:

a. (i)

b. (ii)

c. (i) and (ii)

d. None of (i) and (ii)

Feedback

The correct answer is: (i)

Question **10**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace**

**H = { [a+2b+2d, c+d, -3a-6b+4c-2d, -c-d] | a, b, c, d in R}**

Select one:

a. dim H = 4

b. dim H = 3

c. dim H = 2

d. dim H = 1

Feedback

The correct answer is: dim H = 2

Question **11**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace  
  
U={[a+3c, b, a+3c] | a, b, c in R}**

Select one:

a. 1

b. None of the other choices is correct

c. 4

d. 3

e. 2

Feedback

The correct answer is: 2

Question **12**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Which of the following statements are FALSE?  
  
(i) The set S = {[-1, 5], [3, -15]}spans R2  
(ii) The set S = {[-1, 5], [3, -15]}is linearly independent.  
(iii) The set S = {[-1, 5], [3, -15]}is a basis of R2**

Select one:

a. ii) and iii) only

b. none of them

c. all of them

d. i) and iii) only

Feedback

The correct answer is: all of them

Question **13**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Which of the following statements are true?**

**(i) if {X, Y} is orthogonal in Rn then {X, X+Y} is also orthogonal.**

**(ii) if {X,Y} and {Z, W} are both orthogonal then {X,Y,Z,W} is also orthogonal.**

**(iii) if {X, Y} is orthonormal then {X-Y, X+Y} is orthogonal.**

Select one:

a. (i) and (ii)

b. (ii) and (iii)

c. (iii)

d. None of the other choices is correct

e. (i)

Feedback

The correct answer is: (iii)

Question **14**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Find the dimension of the null space of the matrix****[A=\left[\begin{matrix} 1&-2&-1&-1\\0&1&4&1\\1&-1&3&0\end{matrix}\right]](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=A%3D%5Cleft%5B%5Cbegin%7Bmatrix%7D%201%26-2%26-1%26-1%5C%5C0%261%264%261%5C%5C1%26-1%263%260%5Cend%7Bmatrix%7D%5Cright%5D)**

Select one:

a. 3

b. None of the other choices is correct

c. 4

d. 2

e. 1

Feedback

The correct answer is: 2

Question **15**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Solve the problem.  
  
Let A be a 7 × 9 matrix. Suppose dim Null(A) = 3, find Rank A, Dim Row (A), and Dim Col (A).**

Select one:

a. Rank A = 6, Dim Row A = 6, Dim Col A = 3

b. Rank A = 4, Dim Row A = 4, Dim Col A = 4

c. Rank A = 6, Dim Row A = 3, Dim Col A = 3

d. Rank A = 6, Dim Row A = 6, Dim Col A = 6

Feedback

The correct answer is: Rank A = 6, Dim Row A = 6, Dim Col A = 6

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let P(1,2,1), Q(1,0,-1), R(2,2,0) be the vertices of a parallelogram with adjacent sides PQ and PR. Find the other vertex S.**

Select one:

a. (0, -4, -4)

b. (4, 0, 4)

c. (2, 0, -2)

d. None of the other choices is correct

e. (2, -2, 0)

Feedback

The correct answer is: (2, 0, -2)

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find an equation of the line passing through P(0,1,1) and perpendicular to the two lines  
  
(d1) [x, y, z] = [1,1,1] + t [0, -1, 2]  
  
(d2) [x, y, z] = [1,0, -1] + t [2, 1, 1]**

Select one:

a. [x, y, z] = [0, 1, 1] +t [-3, 4, 2]

b. None of the other choices is correct

c. 0(x+3) + (y-4)+ (z-2) = 0

d. -3x + 4(y-1)+ 2(z-1) = 0

e. [x, y, z] = [-3, 4, 2] + t [0, 1, 1]

Feedback

The correct answer is: [x, y, z] = [0, 1, 1] +t [-3, 4, 2]

Question **3**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Find the shortest distance between the pair of nonparallel lines [x  y  z]T = [1  -1  -1]T+t[2  3  1]T and  [x  y  z]T = [1  -2  -1]T+t[3  2  2]T .**

Select one:

a. None of the other choices is correct

b. [\frac{1}{\sqrt{12}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt%7B12%7D%7D)

c. [\frac{1}{\sqrt{3}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt%7B3%7D%7D)

d. [\frac{1}{\sqrt{14}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt%7B14%7D%7D)

e. [\frac{1}{\sqrt{42}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt%7B42%7D%7D)

Feedback

The correct answer is: [\frac{1}{\sqrt{42}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt%7B42%7D%7D)

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**The volume of the pyramid with vertices (0; 0; 0); (-2; 8; 14); (-6; 7;-3) and (4; 0; 2) is:**

Select one:

a. 60

b. 45

c. 75

d. 70

e. 35

Feedback

The correct answer is: 70

Question **5**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (2, 0, 1); v = (3, 1, 0). Find the length of the vector u x (100u+2v).**

Select one:

a. [\sqrt{156}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B156%7D)

b. [\sqrt{1566}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B1566%7D)

c. None of the other choices is correct

d. [\sqrt{56}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B56%7D)

Feedback

The correct answer is: [\sqrt{56}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B56%7D)

Question **6**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**If U = (1; 1;-1); V = (0; 2;-1); W = (1;-3; 3); then the cosine of the angle between V x W**

**and U x V is:**

Select one:

a. [\frac{2}{21}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B21%7D)

b. [\frac{-1}{\sqrt{21}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B%5Csqrt%7B21%7D%7D)

c. [\frac{-1}{\sqrt7}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B%5Csqrt7%7D)

d. [\frac{\sqrt2}{\sqrt{21}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt2%7D%7B%5Csqrt%7B21%7D%7D)

e. [\frac{-1}{21}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B21%7D)

Feedback

The correct answer is: [\frac{-1}{\sqrt{21}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B%5Csqrt%7B21%7D%7D)

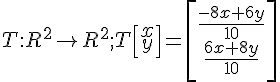
Question **7**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If****[[](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%20%5Crightarrow%20R%5E%7B2%7D%3B%20T%5Cleft%5B%5Cbegin%7Barray%7D%7Bc%7Dx%20%5C%5Cy%20%5C%5C%5Cend%7Barray%7D%5Cright%5D%20%3D%5Cleft%5B%5Cbegin%7Barray%7D%7Bc%7D%5Cfrac%7B-8x%2B6y%7D%7B10%7D%20%5C%5C%5Cfrac%7B6x%2B8y%7D%7B10%7D%20%5C%5C%5Cend%7Barray%7D%5Cright%5D%20)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%20%5Crightarrow%20R%5E%7B2%7D%3B%20T%5Cleft%5B%5Cbegin%7Barray%7D%7Bc%7Dx%20%5C%5Cy%20%5C%5C%5Cend%7Barray%7D%5Cright%5D%20%3D%5Cleft%5B%5Cbegin%7Barray%7D%7Bc%7D%5Cfrac%7B-8x%2B6y%7D%7B10%7D%20%5C%5C%5Cfrac%7B6x%2B8y%7D%7B10%7D%20%5C%5C%5Cend%7Barray%7D%5Cright%5D%20" \o "TeX).  
  
Determine if T is projection on a line, reflection in a line, or rotation through an angle, and find the line or angle.**

Select one:

a. Projection in the line y = 3x

b. None of the other choices is correct

c. Projection in the line y = 3x

d. Reflection in the line y = 3x

e. Reflection in the line y = -3x

Feedback

The correct answer is: Reflection in the line y = 3x

Question **8**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Which of the followings are true?**

**(i) R2 = span{[1, 2]T, [0, 1]T, [2, 3]T}.**

**(ii) R3 = span{[1, 1, 1]T; [0, 0, 1]T}.**

Select one:

a. (i) and (ii)

b. (ii) only

c. None of the other choices is correct

d. (i) ony

Feedback

The correct answer is: (i) ony

Question **9**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following is a subspace of R4?  
  
(i) {(a,b,c,d)| a=b=0}  
  
(ii) {(a,b,c,d)| a=1, b=0 and c+d=1}  
  
(iii) { (a,b,c,d)| a>0 and b<0}**

Select one:

a. (i)

b. (i) and (ii)

c. None of the other choices is correct

d. (ii) and (iii)

e. (iii)

Feedback

The correct answer is: (i)

Question **10**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace  
  
U={[a+c, b+c, a+2c+b] | a, b, c in R}**

Select one:

a. 1

b. 2

c. 3

d. 4

Feedback

The correct answer is: 2

Question **11**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = {[2x+y+z; 4x+2y+z; 6x+3y+z ]}.**

Select one:

a. 1

b. None of the other choices is true

c. 2

d. 3

Feedback

The correct answer is: 2

Question **12**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let the set of vectors {u, v, w} in R3 be dependent. Which of the followings are true?**

**(i) w must be a linear combination of u and v.**

**(ii) There exists (a, b, c) with a2+b2+c2 not zero such that a.u + b.v + c.w = 0**

Select one:

a. (i) and (ii)

b. None of the other choices is correct

c. (ii) only

d. (i) only

Feedback

The correct answer is: (ii) only

Question **13**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let X = [a, b, c]. Let U be the subspace spanned by the orthogonal basis  
  
{u = [1, 1, 1], v = [1, -1, 0], w = [1, 1, -2]}.  
  
Find the coefficient of u when expressing X as a linear combination of {u, v, w}.**

Select one:

a. None of the other choices is correct

b. 1/3

c. (a+b+c)/3

d. a

e. a+b+c

Feedback

The correct answer is: (a+b+c)/3

Question **14**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the null space of the matrix****[A=\begin{bmatrix}1&2&-1&2&1\\1&2&2&0&1\\2&4&-2&3&1\end{bmatrix}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=A%3D%5Cbegin%7Bbmatrix%7D1%262%26-1%262%261%5C%5C1%262%262%260%261%5C%5C2%264%26-2%263%261%5Cend%7Bbmatrix%7D)**

Select one:

a. 4

b. 5

c. None of the other choices is correct

d. 3

e. 2

Feedback

The correct answer is: 2

Question **15**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let A be a 3 x 5 matrix and let dim(null(A))=2. Which of the following statements are true?**

**(i) All bases of the Col(A) have three vectors.**

**(ii) dim(Row(A)) = 1**

Select one:

a. Both (i) and (ii)

b. (ii) only

c. (i) only

d. Neither (i) nor (ii)

Feedback

The correct answer is: (i) only

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the parametric equations of the line passing through A(1; 0; -3) and parallel to the line with parametric equations x = -1+t; y = 2-3t; z = 5+t.**

Select one:

a. x=1+5t; y = -15t; z = -3+t

b. x=t; y = -3t; z = t

c. none of the other choices is true

d. x=1+t; y = -3t; z = -3+t

e. x=1+t; y = -3t; z = 9+t

Feedback

The correct answer is: x=1+t; y = -3t; z = -3+t

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**For what value of k are the two planes 3kx+y-5kz+10=0, 2x-3y+z+12=0 orthogonal?**

Select one:

a. -1

b. 3

c. 2

d. 1

e. none of the other choices is true

Feedback

The correct answer is: 3

Question **3**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let Q be the point on the plane x+y+z=1 that is closet to P(1,1,1). Find the first coordinate of Q.**

Select one:

a. -1/3

b. 1/3

c. -2/3

d. 2/3

e. None of the other choices is correct

Feedback

The correct answer is: 1/3

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (1, 2, 1); v = (2, 3, 0); w = (0, 1, 0). Find projection of u x v on w.**

Select one:

a. (0, 2, 0)

b. (0, 0, 0)

c. (0, 10, 0)

d. None of the other choices is correct

e. [\frac{2}{\sqrt{15}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B%5Csqrt%7B15%7D%7D)(-6, 4, -2)

Feedback

The correct answer is: (0, 2, 0)

Question **5**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the area of the triangle with vertices A(1, 2, 1); B(3; 2, 1), C(0, 5, 2).**

Select one:

a. [\sqrt{10}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B10%7D)

b. None of the other choices is correct

c. [\sqrt{40}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B40%7D)

d. 20

Feedback

The correct answer is: [\sqrt{10}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B10%7D)

Question **6**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**The volume of the pyramid with vertices (0; 0; 0); (-2; 8; 14); (-6; 7;-3) and (4; 0; 2) is:**

Select one:

a. 35

b. 75

c. 60

d. 45

e. 70

Feedback

The correct answer is: 70

Question **7**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let****[[T:R^{2}\rightarrow R^{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%5Crightarrow%20R%5E%7B2%7D)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%5Crightarrow%20R%5E%7B2%7D" \o "TeX)be reflection in the x-axis followed by reflection in the line****[[y=2x](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=y%3D2x)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=y%3D2x" \o "TeX). Find the sum of all entries in the first column of the matrix of****[[T](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T" \o "TeX).**

Select one:

a. -3/5

b. None of the other choices is correct

c. -7/5

d. -4/5

e. 1/5

Feedback

The correct answer is: 1/5

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u1 = [-2, 0, 1] , u2 = [3, 5, 6] , u3 = [-2, 6, -4] , x = [-2, -32, -19]**

**If express the vector x as**

**x=au1 +bu2+cu3**

**then find c.**

Select one:

a. -2

b. none of the other choices is true

c. 0

d. -3

e. -1

Feedback

The correct answer is: -2

Question **9**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Which of the following are subspaces of R3?  
  
(i) {(x, y, z)| 2x-y+3z=0}  
  
(ii) (x, y, z)| xy=0}**

Select one:

a. (i) only

b. (i) and (ii)

c. (ii) only

d. none of them

Feedback

The correct answer is: (i) only

Question **10**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = span{[1, 1, 1], [2, 5, 2], [1, 2, 3]}.**

Select one:

a. 2

b. 3

c. 1

d. none of the other choices is true

Feedback

The correct answer is: 3

Question **11**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = span{[1, 2], [2, -1], [0, 4], [1, -5]}.**

Select one:

a. 1

b. 2

c. 4

d. 3

Feedback

The correct answer is: 2

Question **12**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**For what values of a is the set  
  
{[1, 1, 1], [1, 0, 2], [1, a, 1]}  
  
linearly dependent?**

Select one:

a. 1

b. -2

c. 2

d. [-\frac{1}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=-%5Cfrac%7B1%7D%7B2%7D)

e. 0

f. -1

Feedback

The correct answer is: 1

Question **13**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If we write X = [2 -3 2 7]T as a linear combination of the orthogonal basis of the subspace U = span{[2 -1 0 3]T ; [2 1 -2 -1]T} then the sum of coefficients equals**

Select one:

a. 1

b. [\frac{2}{3}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B3%7D)

c. none of the other choices is true

d. 0

Feedback

The correct answer is: 1

Question **14**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the null space of the matrix**

**[A=\left[\begin{matrix} 1&-2&3&-3&-1\\-2&5&-5&4&-4\\-1&3&-2&1&-5\end{matrix}\right]](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=A%3D%5Cleft%5B%5Cbegin%7Bmatrix%7D%201%26-2%263%26-3%26-1%5C%5C-2%265%26-5%264%26-4%5C%5C-1%263%26-2%261%26-5%5Cend%7Bmatrix%7D%5Cright%5D)**

Select one:

a. 4

b. 3

c. 5

d. 2

e. 1

Feedback

The correct answer is: 3

Question **15**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let A be a 3 x 5 matrix. If dim(null(A))=2, then the dimension of the column space of A is**

Select one:

a. 3

b. 2

c. 1

d. None of the other choices is correct

Feedback

The correct answer is: 3

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following statements are true? (u, v in R3)**

**(i) || -5u || = -5|| u ||**

**(ii) || u-v || = || u || -|| v ||**

**(iii) If u, v, u+v are nonzero and u and (u+v) are parallel, then u and v are also parallel.**

Select one:

a. None of the other choices is correct

b. (iii)

c. (i) and (iii)

d. (i) and (ii)

e. (ii) and (iii)

Feedback

The correct answer is: (iii)

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If u = (-2, 1, 1) and v = (1, 0, 1), then || projv (u) || is :**

Select one:

a. [\frac{1}{6}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B6%7D)

b. [\frac{\sqrt6}{6}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt6%7D%7B6%7D)

c. 1

d. [\frac{\sqrt2}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt2%7D%7B2%7D)

e. 0

Feedback

The correct answer is: [\frac{\sqrt2}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt2%7D%7B2%7D)

Question **3**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let the point P(2, -1, 0). Find the point Q on the plane x - y + z = 1 that is  closest to P.**

Select one:

a. (0, 1, 2)

b. (4/3, -1/3, -2/3)

c. (2, 1, 0)

d. None of the other choices is correct

Feedback

The correct answer is: (4/3, -1/3, -2/3)

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (1, 2, 1); v = (2, 3, 0); w = (0, 1, 0). Find projection of u x v on w.**

Select one:

a. (0, 2, 0)

b. (0, 0, 0)

c. (0, 10, 0)

d. None of the other choices is correct

e. [\frac{2}{\sqrt{15}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B%5Csqrt%7B15%7D%7D)(-6, 4, -2)

Feedback

The correct answer is: (0, 2, 0)

Question **5**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**The volume of the pyramid with vertices (0 ; 0 ; 0) ; ( - 1 ; 8 ; 1) ; ( -16 ; 0 ; 1) and (2 ; 0 ;-2) is:**

Select one:

a. None of the other choices is correct

b. 40

c. 120

d. 80

e. 240

Feedback

The correct answer is: 40

Question **6**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (1; 1; 1); v = (0; 1; 1) and w = (1; 0; 1). Find the length of x = (3u + v)****[[\times](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctimes)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctimes" \o "TeX)w.**

Select one:

a. none of the other choices is true

b. [\sqrt{43}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B43%7D)

c. [\sqrt{13}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B13%7D)

d. [\sqrt{23}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B23%7D)

e. [\sqrt{33}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B33%7D)

Feedback

The correct answer is: [\sqrt{33}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B33%7D)

Question **7**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let T be projection on the line y = 2x followed by rotation through****[[\frac{\pi}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Cpi%7D%7B2%7D)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Cpi%7D%7B2%7D" \o "TeX). Find T[x y].**

Select one:

a. (1/5)[4x-3y; -3x-4y]

b. (1/5)[-2x-4y; x+2y]

c. None of the other choices is corrrect

d. (1/5)[4x+3y; -3x+4y]

e. (1/5)[-2x+4y; x+2y]

Feedback

The correct answer is: (1/5)[-2x-4y; x+2y]

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Determine whether x = (5, 6) lies in U= span{u=(1, 2); v=(0, 1); w=(2, 3)}. If so, write x = a.u+ b.v +c.w then find a+b+c.**

Select one:

a. None of the other choices is true

b. a+b+c = 1

c. It does not lie in U

d. a+b+c = 0

e. There are infinitely many values of a+b+c

Feedback

The correct answer is: a+b+c = 1

Question **9**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Which of the following are subspaces of R3 ?**

**(i) {(x,y,z)| z = 2x+3y+2}**

**(ii) {(x,y,z)| x2+y2=z2}**

Select one:

a. (i) and (ii)

b. (ii) only

c. (i) only

d. None of the other choices is correct

Feedback

The correct answer is: None of the other choices is correct

Question **10**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace  
  
U={[x, y, z, w]| x-2y+3z+4w = 0, 3x-5y+7z+8w = 0}**

Select one:

a. None of the other choices is correct

b. 2

c. 3

d. 4

e. 1

Feedback

The correct answer is: 2

Question **11**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = {[x, y, z, t] | x+4y-z = 0; x-2z+ t= 0}.**

Select one:

a. 2

b. 4

c. 3

d. 1

Feedback

The correct answer is: 2

Question **12**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**For what values of x are the vectors [1, -1, 2], [1, x, -4], [-1, 0, x] linearly dependent?**

Select one:

a. all numbers but 4 and -1

b. -4; 1

c. all numbers but -4 and 1

d. None of the other choices is correct

e. 4; -1

Feedback

The correct answer is: -4; 1

Question **13**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the number a such that the set {[1 2 1 0]T, [1 -1 1 3]T, [2 -1 0 -1]T, [a b c 1]T } is orthogonal.**

Select one:

a. None of the other choices is correct

b. 1

c. 2

d. 0

e. -2

Feedback

The correct answer is: 1

Question **14**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let****[[A=\begin{bmatrix} 1&-2& 1& 1\\-2& 4& 3& -2\end{bmatrix}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=A%3D%5Cbegin%7Bbmatrix%7D%201%26-2%26%201%26%201%5C%5C-2%26%204%26%203%26%20-2%5Cend%7Bbmatrix%7D)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=A%3D%5Cbegin%7Bbmatrix%7D%201%26-2%26%201%26%201%5C%5C-2%26%204%26%203%26%20-2%5Cend%7Bbmatrix%7D" \o "TeX). Find rank(A) and dim(null(A).**

Select one:

a. [rank(A)=2](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=rank%28A%29%3D2)and [\dim(null(A))=1](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cdim%28null%28A%29%29%3D1)

b. None of the other choices is correct

c. [rank(A)=2](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=rank%28A%29%3D2)and [\dim(null(A))=3](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cdim%28null%28A%29%29%3D3)

d. [rank(A)=2](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=rank%28A%29%3D2)and [\dim(null(A))=2](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cdim%28null%28A%29%29%3D2)

e. [rank(A)=1](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=rank%28A%29%3D1)and [\dim(null(A))=3](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cdim%28null%28A%29%29%3D3)

Feedback

The correct answer is: [rank(A)=2](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=rank%28A%29%3D2)and [\dim(null(A))=2](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cdim%28null%28A%29%29%3D2)

Question **15**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If A is a 5 × 9 matrix that has rank 2, find dim(Im(A)), dim(Null(A))**

Select one:

a. dim(Im(A)) = 7, dim(Null(A)) = 2

b. None of the other choices is correct

c. dim(Im(A)) = 9, dim(Null(A)) = 3

d. dim(Im(A)) = 2, dim(Null(A)) = 3

e. dim(Im(A)) = 2, dim(Null(A)) = 7

Feedback

The correct answer is: dim(Im(A)) = 2, dim(Null(A)) = 7

Top of Form

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following points lie on the line x = 2-t; y = 1+t; z = 7-2t?**

**(i) A(-3, 6, -3)**

**(i) B(0, 3, 0)**

Select one:

a. Both A and B

b. B only

c. Neither A nor B

d. A only

Feedback

The correct answer is: A only

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find an equation of the plane which passes through the point Q(1, -7, 8) and perpendicular to the line with parametric equations  
  
x= 2+ 2t, y = 7-4t, z = -3+t**

Select one:

a. 3x-6y+3z-39=0

b. 2x-4y+z-72=0

c. 4x-8y+2z-92=0

d. 2x-4y+z-38=0

Feedback

The correct answer is: 2x-4y+z-38=0

Question **3**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let Q be the point on the plane x+y+z=1 that is closet to P(1,0,1). Find the first coordinate of Q.**

Select one:

a. None of the other choices is correct

b. -1/3

c. 2/3

d. -2/3

e. 1/3

Feedback

The correct answer is: 2/3

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Consider the points A(1; 2; 3); B(1; 3; 2) and C(2; 1; 3). Find a point D on the Z-axis so that**

**the volume of the tetrahedron ABCD is 3.**

Select one:

a. (0, 0, 2)

b. (0, 0, -6)

c. (0, 0 -12)

d. (0, 0, 18)

e. (0, 0, -15)

Feedback

The correct answer is: (0, 0 -12)

Question **5**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (2, 0, 1); v = (3, 1, 0). Find the length of the vector u x (100u+2v).**

Select one:

a. [\sqrt{1566}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B1566%7D)

b. None of the other choices is correct

c. [\sqrt{156}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B156%7D)

d. [\sqrt{56}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B56%7D)

Feedback

The correct answer is: [\sqrt{56}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B56%7D)

Question **6**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If U = (1; 1;-1); V = (0; 2;-1); W = (1;-3; 3); then the cosine of the angle between V x W**

**and U x V is:**

Select one:

a. [\frac{-1}{21}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B21%7D)

b. [\frac{2}{21}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B21%7D)

c. [\frac{-1}{\sqrt{21}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B%5Csqrt%7B21%7D%7D)

d. [\frac{\sqrt2}{\sqrt{21}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt2%7D%7B%5Csqrt%7B21%7D%7D)

e. [\frac{-1}{\sqrt7}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B%5Csqrt7%7D)

Feedback

The correct answer is: [\frac{-1}{\sqrt{21}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B%5Csqrt%7B21%7D%7D)

Question **7**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let T be projection on the line y = 2x followed by reflection in the X axis. Find T[x y].**

Select one:

a. (1/5)[x+2y; -2x-4y]

b. (1/5)[x+2y; -2x+4y]

c. (1/5)[4x-3y; -3x-4y]

d. (1/5)[-2x+4y; x+2y]

e. None of the other choices is corrrect

Feedback

The correct answer is: (1/5)[x+2y; -2x-4y]

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (3, 3, 6), v = (4, 4, 3), w = (-6, 3, 3) and x = (41, 5, 12). We can write  
  
x = au + bv + cw,  
  
where a, b, c are numbers. Find b.**

Select one:

a. 2

b. none of the other choices is true

c. 4

d. 1

e. 3

Feedback

The correct answer is: 2

Question **9**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following are subspaces of R2**

**(i) {(x,y): 2x+7y = 0}**

**(ii) {(x,y): y=0}**

Select one:

a. (i) and (ii)

b. (i) ony

c. None of the other choices is correct

d. (ii) only

Feedback

The correct answer is: (i) and (ii)

Question **10**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = span{[1, 2], [2, -1], [0, 4], [1, -5]}.**

Select one:

a. 4

b. 1

c. 3

d. 2

Feedback

The correct answer is: 2

Question **11**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let U = {[x, y, z]| x - 2y + z = 0, x + y - z = 0}. Which of the following is a basis for U?**

Select one:

a. {[1, -1, 1], [0, 1, 1]}

b. None of the other choices is correct

c. {[1, -1, 1]}

d. {[1, 2, 3], [2, 4, 6]}

e. {[1, 2, 3]}

Feedback

The correct answer is: {[1, 2, 3]}

Question **12**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find all values of a such that {[1, 4, 5], [0, a, 1], [0, 4, a]} is dependent.**

Select one:

a. a = 2

b. a = 2; a= -2

c. a = -2

d. [a \neq 2; a \neq -2](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=a%20%5Cneq%202%3B%20a%20%5Cneq%20-2)

Feedback

The correct answer is: a = 2; a= -2

Question **13**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following statements are true?**

**(i) if {X, Y} is orthogonal in Rn then {X, X+Y} is also orthogonal.**

**(ii) if {X,Y} and {Z, W} are both orthogonal then {X,Y,Z,W} is also orthogonal.**

**(iii) if {X, Y} is orthonormal then {X-Y, X+Y} is orthogonal.**

Select one:

a. (iii)

b. (ii) and (iii)

c. (i) and (ii)

d. None of the other choices is correct

e. (i)

Feedback

The correct answer is: (iii)

Question **14**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the following subspace of R4  
  
U=span{[1, 3, -1, -3], [2, 4,1, 0], [1, 5, -4, -9]}.**

Select one:

a. 2

b. 1

c. None of the other choices is correct

d. 3

Feedback

The correct answer is: 2

Question **15**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let A is a 150x350 matrix. Which of the following statements are true?  
(i) dim(Null(A)) must be at least 200.  
(ii) dim(col(A)) + dim(row(A)) = 500**

Select one:

a. None of the other choices is true

b. Both (i) and (ii)

c. (ii) only

d. (i) only

Feedback

The correct answer is: (i) only

Bottom of Form

\

Question **1**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Find the point of intersection (if any) of the following pair of lines:**

**d1: x =3+t; y =-1+t; z = 2-t**

**d2: x = 1+2s; y = 1; z = -2+3s**

Select one:

a. none of the other choices is true

b. It does not exist

c. (4; 0; 1)

d. (5; 1; 4)

Feedback

The correct answer is: It does not exist

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the vectors below is orthogonal to both (2, 1, -1) and (-3, -2, 4)?**

Select one:

a. (2, -5, -1)

b. (-4, 0, 3)

c. (1, -2, 0)

d. none of the other choices is true

e. (1, 0, 1)

Feedback

The correct answer is: (2, -5, -1)

Question **3**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let the point P(2, -1, 3). Find the third coodinate of the point Q on the plane x - 2y + z = 1 that is  closest to P.**

Select one:

a. None of the other choices is correct

b. 2

c. 1

d. 0

Feedback

The correct answer is: 2

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the area of the triangle with the following vertices A(1, 1, -1), B(2, 0, 1), C(1, -1, 3).**

Select one:

a. none of the other choices is true

b. [\sqrt{20}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B20%7D)

c. 1

d. 2

e. [\sqrt5](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt5)

Feedback

The correct answer is: [\sqrt5](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt5)

Question **5**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let u = (u1, u2, u3); v = (v1, v2, v3); w = (w1, w2, w3). Which of the following statements are false?**

**(i)****[[(u\times v).v = 0](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%28u%5Ctimes%20v%29.v%20%3D%200)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%28u%5Ctimes%20v%29.v%20%3D%200" \o "TeX).**

**(ii)****[[\mid\mid u\times v\mid\mid = \mid\mid u\mid\mid.\mid\mid v\mid\mid.cos\theta](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cmid%5Cmid%20u%5Ctimes%20v%5Cmid%5Cmid%20%3D%20%5Cmid%5Cmid%20u%5Cmid%5Cmid.%5Cmid%5Cmid%20v%5Cmid%5Cmid.cos%5Ctheta)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cmid%5Cmid%20u%5Ctimes%20v%5Cmid%5Cmid%20%3D%20%5Cmid%5Cmid%20u%5Cmid%5Cmid.%5Cmid%5Cmid%20v%5Cmid%5Cmid.cos%5Ctheta" \o "TeX), where****[[\theta](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctheta)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctheta" \o "TeX)is an angle beetween****[[u](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=u)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=u" \o "TeX)and****[[v](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=v)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=v" \o "TeX).**

**(iii)****[(u\times v).w =det \left[\begin{array}{ccc}w_{1}& w_{2}& w_{3} \\ u_{1}& u_{2}& u_{3}\\v_{1}& v_{2}& v_{3} \end{array} \right] ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%28u%5Ctimes%20v%29.w%20%3Ddet%20%5Cleft%5B%5Cbegin%7Barray%7D%7Bccc%7Dw_%7B1%7D%26%20w_%7B2%7D%26%20w_%7B3%7D%20%5C%5C%20u_%7B1%7D%26%20u_%7B2%7D%26%20u_%7B3%7D%5C%5Cv_%7B1%7D%26%20v_%7B2%7D%26%20v_%7B3%7D%20%5Cend%7Barray%7D%20%5Cright%5D%20)**

Select one:

a. None of the other choices is correct

b. (ii)

c. (i) and (iii)

d. (ii) and (iii)

e. (i)

Feedback

The correct answer is: (ii)

Question **6**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Consider the points A(1; 2; 3); B(1; 3; 2) and C(2; 1; 3). Find a point D on the Z-axis so that**

**the volume of the tetrahedron ABCD is 3.**

Select one:

a. (0, 0, 2)

b. (0, 0, -15)

c. (0, 0 -12)

d. (0, 0, 18)

e. (0, 0, -6)

Feedback

The correct answer is: (0, 0 -12)

Question **7**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let****[[T:R^{2}\rightarrow R^{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%5Crightarrow%20R%5E%7B2%7D)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%5Crightarrow%20R%5E%7B2%7D" \o "TeX)be rotation through****[[\frac{\pi}{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Cpi%7D%7B2%7D)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Cpi%7D%7B2%7D" \o "TeX)followed by reflection in the line****[[y=2x](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=y%3D2x)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=y%3D2x" \o "TeX). Find the (2,2)-entry of the matrix of****[[T](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T" \o "TeX).**

Select one:

a. -4

b. 4/5

c. -4/5

d. None of the other choices is correct

e. 4

Feedback

The correct answer is: -4/5

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Given that b1 = [4, 4, -4], b2 = [2, -2, -1] , x = [-2, 10, -1]**

**Determine if x lies in span{b1, b2}*.***

**If x lies in *B* then find u such that x = ub1 +vb2**

Select one:

a. x lies B and the coefficient of b1 is 1

b. x does not lie in B

c. x lies in B and the coefficient of b1 is 3

d. x lies in B and the coefficient of b1 is -1

e. x lies in B and the coefficient of b1 is -3

Feedback

The correct answer is: x lies B and the coefficient of b1 is 1

Question **9**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Which of the following are subspaces of R3?  
  
(i) {(x,y3,z5)| x, y, z are real numbers}  
  
(ii) {(x, y, z)| x+y3+z5=0}**

Select one:

a. (i) and (ii)

b. (ii)

c. None of (i) and (ii)

d. (i)

Feedback

The correct answer is: (i)

Question **10**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace  
  
U={[a+3c, b, a+3c] | a, b, c in R}**

Select one:

a. None of the other choices is correct

b. 1

c. 4

d. 3

e. 2

Feedback

The correct answer is: 2

Question **11**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = span{[1, 1, 1], [2, 5, 2], [1, 2, 3]}.**

Select one:

a. 3

b. 2

c. 1

d. none of the other choices is true

Feedback

The correct answer is: 3

Question **12**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Given that v1 = [1, -3, 5], v2 =[-3, 8, -2], v3 = [2, -2, 4]. Which of the following statements are true?**

**i) {v1, v2, v3} is linearly independent**

**ii) {v1, v2, v3} is a basis of R3**

Select one:

a. None of (i) and (ii)

b. i) only

c. ii) only

d. both of (i) and (ii)

Feedback

The correct answer is: both of (i) and (ii)

Question **13**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**If we write X = [2 -3 2 7]T as a linear combination of the orthogonal basis of the subspace U = span{[2 -1 0 3]T ; [2 1 -2 -1]T} then the sum of coefficients equals**

Select one:

a. [\frac{2}{3}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B3%7D)

b. 0

c. none of the other choices is true

d. 1

Feedback

The correct answer is: 1

Question **14**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimensions of the null space and the column space of the given matrix.**

**[A=\left[\begin{matrix} 1&-3&-5&3&0\\-2&1&3&-4&1\\-1&-2&-2&-1&1\end{matrix}\right]](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=A%3D%5Cleft%5B%5Cbegin%7Bmatrix%7D%201%26-3%26-5%263%260%5C%5C-2%261%263%26-4%261%5C%5C-1%26-2%26-2%26-1%261%5Cend%7Bmatrix%7D%5Cright%5D)**

Select one:

a. dim Nul A = 3, dim Col A = 3

b. dim Nul A = 4, dim Col A = 1

c. dim Nul A = 2, dim Col A = 3

d. dim Nul A = 3, dim Col A = 2

Feedback

The correct answer is: dim Nul A = 3, dim Col A = 2

Question **15**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let A be a 10x8 matrix, rank(A) = 4. Find dim(row(A)); dim(null(A)).**

Select one:

a. none of the other choices is true

b. dim(row(A) = 4; dim(null(A) = 6

c. dim(row(A) = 8; dim(null(A) = 4

d. dim(row(A) = 4; dim(null(A) = 4

e. dim(row(A) = 10; dim(null(A) = 6

Feedback

The correct answer is: dim(row(A) = 4; dim(null(A) = 4

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let P(1,2,1), Q(1,0,-1), R(2,2,0) be the vertices of a parallelogram with adjacent sides QP and QR. Find the other vertex S.**

Select one:

a. (4, 2, 4)

b. None of the other choices is correct

c. (2, 4, 2)

d. (4, 0, -4)

e. (0, 4, 4)

Feedback

The correct answer is: (2, 4, 2)

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Triangle has vertices A(1, 1, 1), B(2, 3, 1) and C(1, 2, 3). Find the cosine of the interior angle at A.**

Select one:

a. [\frac{2}{5}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B5%7D)

b. 0

c. [\frac{1}{5}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B5%7D)

d. [\frac{4}{5}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B4%7D%7B5%7D)

e. [\frac{3}{5}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B3%7D%7B5%7D)

Feedback

The correct answer is: [\frac{2}{5}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B5%7D)

Question **3**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the shortest distance between the pair of parallel lines [x  y  z]T = [1  1  1]T+t[-2  0  3]T and  [x  y  z]T = [0  1  0]T+t[-2  0  3]T**

Select one:

a. [\frac{3}{\sqrt{13}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B3%7D%7B%5Csqrt%7B13%7D%7D)

b. [\frac{1}{\sqrt{13}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt%7B13%7D%7D)

c. None of the other choices is correct

d. [\frac{5}{\sqrt{13}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B5%7D%7B%5Csqrt%7B13%7D%7D)

e. [\frac{4}{\sqrt{13}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B4%7D%7B%5Csqrt%7B13%7D%7D)

Feedback

The correct answer is: [\frac{5}{\sqrt{13}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B5%7D%7B%5Csqrt%7B13%7D%7D)

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**The volume of the pyramid with vertices (0; 0; 0); (-2; 8; 14); (-6; 7;-3) and (4; 0; 2) is:**

Select one:

a. 35

b. 60

c. 45

d. 75

e. 70

Feedback

The correct answer is: 70

Question **5**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (u1, u2, u3); v = (v1, v2, v3); w = (w1, w2, w3). Which of the following statements are false?**

**(i)****[[(u\times v).v = 0](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%28u%5Ctimes%20v%29.v%20%3D%200)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%28u%5Ctimes%20v%29.v%20%3D%200" \o "TeX).**

**(ii)****[[\mid\mid u\times v\mid\mid = \mid\mid u\mid\mid.\mid\mid v\mid\mid.cos\theta](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cmid%5Cmid%20u%5Ctimes%20v%5Cmid%5Cmid%20%3D%20%5Cmid%5Cmid%20u%5Cmid%5Cmid.%5Cmid%5Cmid%20v%5Cmid%5Cmid.cos%5Ctheta)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cmid%5Cmid%20u%5Ctimes%20v%5Cmid%5Cmid%20%3D%20%5Cmid%5Cmid%20u%5Cmid%5Cmid.%5Cmid%5Cmid%20v%5Cmid%5Cmid.cos%5Ctheta" \o "TeX), where****[[\theta](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctheta)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctheta" \o "TeX)is an angle beetween****[[u](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=u)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=u" \o "TeX)and****[[v](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=v)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=v" \o "TeX).**

**(iii)****[(u\times v).w =det \left[\begin{array}{ccc}w_{1}& w_{2}& w_{3} \\ u_{1}& u_{2}& u_{3}\\v_{1}& v_{2}& v_{3} \end{array} \right] ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%28u%5Ctimes%20v%29.w%20%3Ddet%20%5Cleft%5B%5Cbegin%7Barray%7D%7Bccc%7Dw_%7B1%7D%26%20w_%7B2%7D%26%20w_%7B3%7D%20%5C%5C%20u_%7B1%7D%26%20u_%7B2%7D%26%20u_%7B3%7D%5C%5Cv_%7B1%7D%26%20v_%7B2%7D%26%20v_%7B3%7D%20%5Cend%7Barray%7D%20%5Cright%5D%20)**

Select one:

a. (ii)

b. (i)

c. (i) and (iii)

d. None of the other choices is correct

e. (ii) and (iii)

Feedback

The correct answer is: (ii)

Question **6**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (2, 0, 1); v = (3, 1, 0). Find the length of the vector u x (100u+2v).**

Select one:

a. [\sqrt{56}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B56%7D)

b. [\sqrt{1566}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B1566%7D)

c. [\sqrt{156}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B156%7D)

d. None of the other choices is correct

Feedback

The correct answer is: [\sqrt{56}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B56%7D)

Question **7**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let****[[T:R^{2}\rightarrow R^{2}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%5Crightarrow%20R%5E%7B2%7D)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%5Crightarrow%20R%5E%7B2%7D" \o "TeX)be projection on the y-axis followed by reflection in the line****[[y=-2x](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=y%3D-2x)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=y%3D-2x" \o "TeX). Find the sum of (1,1)-entry and (2,2)-entry of the matrix of****[[T](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T" \o "TeX).**

Select one:

a. 7/5

b. -4/5

c. 0

d. 3/5

e. None of the other choices is correct

Feedback

The correct answer is: 3/5

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (3, 3, 6), v = (4, 4, 3), w = (-6, 3, 3) and x = (41, 5, 12). We can write x as  
  
x = au + bv + cw,  
  
where a, b, c are numbers. Find a.**

Select one:

a. 1

b. 2

c. None of the other choices is correct

d. -4

e. 3

Feedback

The correct answer is: 3

Question **9**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following are subspaces of R2 ?**

**(i) {(x,y)| x=y2}**

**(ii) {(x,y)| xy > 0 or xy = 0}**

Select one:

a. (ii) only

b. (i) and (ii)

c. (i) only

d. None of the other choices is correct

Feedback

The correct answer is: None of the other choices is correct

Question **10**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = {[x+2y+3z, -2x-4y-6z, 5x+10y+15z]| x, y, z are real numbers}.**

Select one:

a. 2

b. None of the other choices is true

c. 1

d. 3

Feedback

The correct answer is: 1

Question **11**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace**

**H = { [a+2b+2d, c+d, -3a-6b+4c-2d, -c-d] | a, b, c, d in R}**

Select one:

a. dim H = 1

b. dim H = 3

c. dim H = 2

d. dim H = 4

Feedback

The correct answer is: dim H = 2

Question **12**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Which of the following sets are linearly independent?  
  
(i) {[1, 1, 1], [1, 0, 1], [-1, 1, -1]}  
  
(ii) {[1, 2], [3, 4], [-1, -1]}  
  
(iii) {[1, 2, 1], [1, 1, 1], [-1, 0, 0], [0, 0, 1]}**

Select one:

a. None of the other choices is correct

b. (i)

c. (i) and (ii)

d. (iii) and (i)

e. (ii)

Feedback

The correct answer is: None of the other choices is correct

Question **13**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let X = [a, b, c]. Let U be the subspace spanned by the orthogonal basis  
  
{u = [1, 1, 1], v = [1, -1, 0], w = [1, 1, -2]}.  
  
Find the coefficient of u when expressing X as a linear combination of {u, v, w}.**

Select one:

a. a

b. a+b+c

c. 1/3

d. (a+b+c)/3

e. None of the other choices is correct

Feedback

The correct answer is: (a+b+c)/3

Question **14**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find a basis of null A for****[A=\left[\begin{matrix}1&-1&2&4&6\\0&1&2&1&-1\\0&0&0&1&0 \end{matrix}\right]](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=A%3D%5Cleft%5B%5Cbegin%7Bmatrix%7D1%26-1%262%264%266%5C%5C0%261%262%261%26-1%5C%5C0%260%260%261%260%20%5Cend%7Bmatrix%7D%5Cright%5D)**

Select one:

a. none of the other choices is true

b. {(-9;-1;1;0;1); (-5;1;0;0;1);(-4;-2;1;0;0)}

c. {(14;-22;1;9;0)}

d. {(-4;-2;1;0;0); (-5;1;0;0;1)}

Feedback

The correct answer is: {(-4;-2;1;0;0); (-5;1;0;0;1)}

Question **15**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let A is a 100x200 matrix. Which of the following statements are true?  
(i) dim(Null(A)) must be at least 100.  
(ii) dim(null(A)) + dim(row(A)) = 200**

Select one:

a. (ii) only

b. (i) only

c. Both (i) and (ii)

d. None of the other choices is true

Feedback

The correct answer is: Both (i) and (ii)

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (2; 1; 2) and v = (-1; 0; 1). Find x such that**

**3u + 7v =|| u || (2x+v)**

Select one:

a. x=(2/3; 1; 10/3)

b. none of the other choices is true

c. x=(2; 3; -10)

d. x=(2/6; 3/6; 10/6)

e. x=(2/18; 3/18;10/18)

Feedback

The correct answer is: x=(2/6; 3/6; 10/6)

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Parametric equations of the line containing (-5, 0, 1) and which is parallel to the two planes 2x-4y+z= 0 and x-3y-2z = 1 are:**

Select one:

a. [x=-5+11t, y = -3t, z= 1+2t](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=x%3D-5%2B11t%2C%20y%20%3D%20-3t%2C%20z%3D%201%2B2t)

b. none of the other choices is true

c. [x=-5+11t, y = 5t, z= 1-2t](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=x%3D-5%2B11t%2C%20y%20%3D%205t%2C%20z%3D%201-2t)

d. [x=-5+5t, y = -5t, z= 1-10t](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=x%3D-5%2B5t%2C%20y%20%3D%20-5t%2C%20z%3D%201-10t)

e. [x=5+11t, y = 3t, z= 1+2t](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=x%3D5%2B11t%2C%20y%20%3D%203t%2C%20z%3D%201%2B2t)

Feedback

The correct answer is: [x=-5+11t, y = 5t, z= 1-2t](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=x%3D-5%2B11t%2C%20y%20%3D%205t%2C%20z%3D%201-2t)

Question **3**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let the point P(2, -1, 0). Find the shortest distance from the point P to the line**

**[x y z]T = [1 1 0]T+t[2 -1 -1]T.**

Select one:

a. [\frac{1}{\sqrt3}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt3%7D)

b. [\frac{\sqrt7}{\sqrt3}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt7%7D%7B%5Csqrt3%7D)

c. [\frac{\sqrt7}{\sqrt6}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt7%7D%7B%5Csqrt6%7D)

d. None of the other choices is correct

e. [\frac{1}{\sqrt6}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt6%7D)

Feedback

The correct answer is: [\frac{\sqrt7}{\sqrt3}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt7%7D%7B%5Csqrt3%7D)

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (1, 2, 1); v = (2, 3, 0); w = (0, 1, 0). Find projection of u x v on w.**

Select one:

a. [\frac{2}{\sqrt{15}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B%5Csqrt%7B15%7D%7D)(-6, 4, -2)

b. (0, 0, 0)

c. (0, 10, 0)

d. (0, 2, 0)

e. None of the other choices is correct

Feedback

The correct answer is: (0, 2, 0)

Question **5**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Find the area of the triangle with the following vertices A(1, 1, -1), B(2, 0, 1), C(1, -1, 3).**

Select one:

a. 2

b. 1

c. none of the other choices is true

d. [\sqrt5](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt5)

e. [\sqrt{20}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B20%7D)

Feedback

The correct answer is: [\sqrt5](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt5)

Question **6**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let u = (1; 1; 1); v = (0; 1; 1) and w = (1; 0; 1). Find the length of x = (3u + v)****[[\times](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctimes)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Ctimes" \o "TeX)w.**

Select one:

a. none of the other choices is true

b. [\sqrt{43}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B43%7D)

c. [\sqrt{33}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B33%7D)

d. [\sqrt{23}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B23%7D)

e. [\sqrt{13}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B13%7D)

Feedback

The correct answer is: [\sqrt{33}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B33%7D)

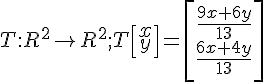
Question **7**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If****[[](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%20%5Crightarrow%20R%5E%7B2%7D%3B%20T%5Cleft%5B%5Cbegin%7Barray%7D%7Bc%7Dx%20%5C%5Cy%20%5C%5C%5Cend%7Barray%7D%5Cright%5D%20%3D%5Cleft%5B%5Cbegin%7Barray%7D%7Bc%7D%5Cfrac%7B9x%2B6y%7D%7B13%7D%20%5C%5C%5Cfrac%7B6x%2B4y%7D%7B13%7D%20%5C%5C%5Cend%7Barray%7D%5Cright%5D%20)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%20%5Crightarrow%20R%5E%7B2%7D%3B%20T%5Cleft%5B%5Cbegin%7Barray%7D%7Bc%7Dx%20%5C%5Cy%20%5C%5C%5Cend%7Barray%7D%5Cright%5D%20%3D%5Cleft%5B%5Cbegin%7Barray%7D%7Bc%7D%5Cfrac%7B9x%2B6y%7D%7B13%7D%20%5C%5C%5Cfrac%7B6x%2B4y%7D%7B13%7D%20%5C%5C%5Cend%7Barray%7D%5Cright%5D%20" \o "TeX).  
  
Determine if T is projection on a line, reflection in a line, or rotation through an angle, and find the line or angle.**

Select one:

a. T is rotation through the angle [-\pi/3](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=-%5Cpi%2F3)

b. T is projection on the line 2x-3y = 0

c. T is reflection in the line 2x-3y = 0

d. T is reflection in the line 3x-2y = 0

e. T is projection on the line 3x-2y = 0

Feedback

The correct answer is: T is projection on the line 2x-3y = 0

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find all values of *a* so that the vector [5, 3, *a*] is in span{[3, 2, 0], [1, 0, 3]}**

Select one:

a. 3

b. 1/2

c. 1

d. 3/2

Feedback

The correct answer is: 3/2

Question **9**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following are subspaces of R3 ?**

**(i) {(x,y,z)| z = (x+y)2}**

**(ii) {(x,y,z)| x=10z}**

Select one:

a. (ii) only

b. (i) only

c. None of the other choices is correct

d. (i) and (ii)

Feedback

The correct answer is: (ii) only

Question **10**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace  
  
U={[a+c, b+c, a+2c+b] | a, b, c in R}**

Select one:

a. 1

b. 4

c. 3

d. 2

Feedback

The correct answer is: 2

Question **11**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = {[x, y, z, t] | x+4y-z = 0; x-2z+ t= 0}.**

Select one:

a. 4

b. 1

c. 2

d. 3

Feedback

The correct answer is: 2

Question **12**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let the set of vectors {u, v, w} in R3 be independent. Which of the followings are true?**

**(i) {2u; 3v } is also independent.**

**(ii) {u; v; w-u-v } is also independent.**

Select one:

a. (i) and (ii)

b. (i) only

c. (ii) only

d. None of the other choices is correct

Feedback

The correct answer is: (i) and (ii)

Question **13**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find a so that B = {(****[\frac{1}{\sqrt3}, \frac{1}{\sqrt3},\frac{1}{\sqrt3}), (-\frac{1}{\sqrt2},\frac{1}{\sqrt2},0) ,(a,b,c)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B1%7D%7B%5Csqrt3%7D%2C%20%5Cfrac%7B1%7D%7B%5Csqrt3%7D%2C%5Cfrac%7B1%7D%7B%5Csqrt3%7D%29%2C%20%28-%5Cfrac%7B1%7D%7B%5Csqrt2%7D%2C%5Cfrac%7B1%7D%7B%5Csqrt2%7D%2C0%29%20%2C%28a%2Cb%2Cc%29)} is an orthonormal set.**

Select one:

a. [ a = \frac{1}{\sqrt3} ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%20a%20%3D%20%5Cfrac%7B1%7D%7B%5Csqrt3%7D%20)or [-\frac{1}{\sqrt3} ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=-%5Cfrac%7B1%7D%7B%5Csqrt3%7D%20)

b. none of the other choices is true

c. [ a = \frac{1}{\sqrt6}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%20a%20%3D%20%5Cfrac%7B1%7D%7B%5Csqrt6%7D)or [-\frac{1}{\sqrt6} ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=-%5Cfrac%7B1%7D%7B%5Csqrt6%7D%20)

d. a = 1 or -1

Feedback

The correct answer is: [ a = \frac{1}{\sqrt6}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%20a%20%3D%20%5Cfrac%7B1%7D%7B%5Csqrt6%7D)or [-\frac{1}{\sqrt6} ](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=-%5Cfrac%7B1%7D%7B%5Csqrt6%7D%20)

Question **14**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of Null(A) for****[A=\left[\begin{array}{ccc}1&2&-9\\2&8&-38\\5&14&-65\end{array}\right]](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=A%3D%5Cleft%5B%5Cbegin%7Barray%7D%7Bccc%7D1%262%26-9%5C%5C2%268%26-38%5C%5C5%2614%26-65%5Cend%7Barray%7D%5Cright%5D)**

Select one:

a. 0

b. 3

c. 2

d. 1

Feedback

The correct answer is: 1

Question **15**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let A be 4 x 7 matrix that has dim(Null(A)) = 5. Choose the correct statements:  
  
(i) A has exactly 5 independent columns  
  
(ii) A has exactly 2 independent rows**

Select one:

a. (ii)

b. None of the other choices is correct

c. (i) and (ii)

d. (i)

Feedback

The correct answer is: (ii)

[**◄ ANOTHER SLIDE**](https://cmshn.fpt.edu.vn/mod/resource/view.php?id=139444&forceview=1)

Question **1**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find all values of a and b such that A(a, b, 2) lies on the line x = 1+t; y = 2 - 2t; z = 1-t.**

Select one:

a. a = 1; b = 2

b. a=0; b = 4

c. None of the other choices is correct

d. a= 0; b = 0

e. a = 2, b = 0

Feedback

The correct answer is: a=0; b = 4

Question **2**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**An equation for the plane passing through the points (2, 1, 3), (1, 0, -1) and (4, -2, 0) is**

Select one:

a. 2x+2y-z=3

b. none of the other choice is true

c. 3x-2y-3z=3

d. 5x+6y-3z+8=0

e. 5x+6y-3z=8

Feedback

The correct answer is: none of the other choice is true

Question **3**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the shortest distance between the pair of parallel lines [x  y  z]T = [1  1  1]T+t[3  0  4]T and  [x  y  z]T = [0  1  0]T+t[3  0  4]T**

Select one:

a. 5

b. None of the other choices is correct

c. 1

d. 1/5

e. 2/25

Feedback

The correct answer is: 1/5

Question **4**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**The volume of the pyramid with vertices (0 ; 0 ; 0) ; ( - 1 ; 8 ; 1) ; ( -16 ; 0 ; 1) and (2 ; 0 ;-2) is:**

Select one:

a. 120

b. 40

c. 240

d. 80

e. None of the other choices is correct

Feedback

The correct answer is: 40

Question **5**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the area of the triangle with vertices A(1, 2, 1); B(3; 2, 1), C(0, 5, 2).**

Select one:

a. None of the other choices is correct

b. [\sqrt{10}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B10%7D)

c. [\sqrt{40}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B40%7D)

d. 20

Feedback

The correct answer is: [\sqrt{10}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Csqrt%7B10%7D)

Question **6**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If U = (1; 1;-1); V = (0; 2;-1); W = (1;-3; 3); then the cosine of the angle between V x W**

**and U x V is:**

Select one:

a. [\frac{-1}{\sqrt7}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B%5Csqrt7%7D)

b. [\frac{-1}{\sqrt{21}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B%5Csqrt%7B21%7D%7D)

c. [\frac{-1}{21}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B21%7D)

d. [\frac{2}{21}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B2%7D%7B21%7D)

e. [\frac{\sqrt2}{\sqrt{21}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B%5Csqrt2%7D%7B%5Csqrt%7B21%7D%7D)

Feedback

The correct answer is: [\frac{-1}{\sqrt{21}}](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cfrac%7B-1%7D%7B%5Csqrt%7B21%7D%7D)

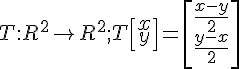
Question **7**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**If****[[](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%20%5Crightarrow%20R%5E%7B2%7D%3B%20T%5Cleft%5B%20%5Cbegin%7Barray%7D%7Bc%7D%20x%20%5C%5C%20y%20%5C%5C%20%5Cend%7Barray%7D%20%5Cright%5D%20%3D%5Cleft%5B%20%5Cbegin%7Barray%7D%7Bc%7D%20%5Cfrac%7Bx-y%7D%7B2%7D%20%5C%5C%20%5Cfrac%7By-x%7D%7B2%7D%20%5C%5C%20%5Cend%7Barray%7D%20%5Cright%5D%20)](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=T%3AR%5E%7B2%7D%20%5Crightarrow%20R%5E%7B2%7D%3B%20T%5Cleft%5B%20%5Cbegin%7Barray%7D%7Bc%7D%20x%20%5C%5C%20y%20%5C%5C%20%5Cend%7Barray%7D%20%5Cright%5D%20%3D%5Cleft%5B%20%5Cbegin%7Barray%7D%7Bc%7D%20%5Cfrac%7Bx-y%7D%7B2%7D%20%5C%5C%20%5Cfrac%7By-x%7D%7B2%7D%20%5C%5C%20%5Cend%7Barray%7D%20%5Cright%5D%20" \o "TeX).  
  
Determine if T is projection on a line, reflection in a line, or rotation through an angle, and find the line or angle.**

Select one:

a. Projection on the line y = x

b. Projection on the line y = 2x

c. None of the other choices is correct

d. Reflection on the line y = 2x

e. Projection on the line y = -x

f. Rotation through [\pi/2](https://cmshn.fpt.edu.vn/filter/tex/displaytex.php?texexp=%5Cpi%2F2)

Feedback

The correct answer is: Projection on the line y = -x

Question **8**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find a such that x = (3, 2, a) lies in U = span{(3, 1, 2), (-1, 1, -2), (2, -1, 3)}.**

Select one:

a. a = -1

b. a = 0

c. None of the other choices is true

d. it does not exist

e. a=1

Feedback

The correct answer is: a=1

Question **9**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Which of the following are subspaces of R2 ?  
  
(i) {(x, y)| x+2y=0}  
  
(ii) {(x, y)| x+y2= 0}**

Select one:

a. (ii)

b. (i)

c. (i) and (ii)

d. None of the other choices is correct

Feedback

The correct answer is: (i)

Question **10**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace  
  
U={[x, y, z, w]| x-2y+3z+4w = 0, 3x-5y+7z+8w = 0}**

Select one:

a. 1

b. 2

c. 3

d. None of the other choices is correct

e. 4

Feedback

The correct answer is: 2

Question **11**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace U = {[2x+y+z; 4x+2y+z; 6x+3y+z ]}.**

Select one:

a. 2

b. 1

c. 3

d. None of the other choices is true

Feedback

The correct answer is: 2

Question **12**

Complete

Mark 0.00 out of 1.00

Flag question

Question text

**Let the set of vectors {u, v, w} in R3 be independent. Which of the followings are true?**

**(i) {u; v; u-v+w} is also independent.**

**(ii) {u; v+w; u+v+w} is also independent.**

Select one:

a. (i) ony

b. None of the other choices is correct

c. (i) and (ii)

d. (ii) only

Feedback

The correct answer is: (i) ony

Question **13**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the number a such that the set {[1 2 1 0]T, [1 -1 1 3]T, [2 -1 0 -1]T, [a b c 1]T } is orthogonal.**

Select one:

a. 1

b. 2

c. 0

d. -2

e. None of the other choices is correct

Feedback

The correct answer is: 1

Question **14**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Find the dimension of the subspace spanned by  
  
[1, 1, 0, 9], [1, 1, 0, -1], [0, 0, 1, 7], [0, 0, 1, 0]**

Select one:

a. 1

b. 4

c. 2

d. 3

Feedback

The correct answer is: 3

Question **15**

Complete

Mark 1.00 out of 1.00

Flag question

Question text

**Let A be a 20x11 matrix, rank(A) = 8. Find dim(Null(A)); dim(Col(A)).**

Select one:

a. dim(Null(A)) = 9; dim(Col(A)) = 12

b. dim(Null(A)) = 3; dim(Col(A)) = 8

c. dim(Null(A)) = 12; dim(Col(A)) = 8

d. dim(Null(A)) = 12; dim(Col(A)) = 3

e. None of the other choices is true

Feedback

The correct answer is: dim(Null(A)) = 3; dim(Col(A)) = 8

**Find the area of the triangle with the following vertices A(1, 1, -1), B(2, 0, 1), C(1, -1, 3).**Top of Form