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**Problem Set 1**

A1 a. >> 1\*2\*3\*4

ans = 24

A1 b. >> (8/4)\*2\*6

ans = 24

A1 c. >> (7+5)\*(3-1)

ans = 24

A1 d. >> (3\*3\*3)-3

ans = 24

A1 e. >> (4\*4)+(4+4)

ans = 24

A2 a. >> x=5;

>> y=4;

>> x=x-y

x = 1

y = 4

A2 b. >> x=5;

>> x=4;

>> x=x-x

x = 0

y = undefined

A2 c. >> x=1;

>> y=2;

>> x=x+y;

>> x=x-y;

>> x=x\*y;

>> x=x/y

x = 1

y = 2

A2 d. >> x=1;

>> y=2;

>> x=x+y;

>> y=x-y;

>> x=x\*y

x = 3

>> y=x/y

y = 3

A2 e. >> x=1;

>> y=2;

>> z=x

z = 1

>> x=y

x = 2

>> y=z

y = 1

A2 f. >> x=125;

>> y=25;

>> y=log(x\*y)/log(x/y);

y = 5

>> x=sqrt(x/y)

x = 5

A2 g. >> x=pi/2;

>> y=pi/3;

>> x=sin(x)\*cos(y)+cos(x)\*sin(y)

x = 0.5000

>> y=(tan(x\*pi+y))^2

y = 0.3333

A2 h. >> x=pi/3;

>> y=pi/2;

>> x=sin(abs(x-y))/tan(x-y)/cos(x-y)

x = -1.0000

>> y=sqrt(x)

y = 0.0000 + 1.0000i

A3 a.

**Original code:**

>> x1 = (3+sqrt(3^2-4\*1\*(-10))/(2\*1);

y1 = 3 \* x1;

x1 = (3-sqrt(3^2-4\*1\*(-10)))/(2\*1);

y2 = 3 \* x2;

d = sqrt((x1-x2)^2+y2-y1^2);

**Corrected code:**

>> x1 = (3+sqrt(3^2-4\*1\*(-10)))/(2\*1);

y1 = 3 \* x1;

x2 = (3-sqrt(3^2-4\*1\*(-10)))/(2\*1);

y2 = 3 \* x2;

d = sqrt((x1-x2)^2+(y1-y2)^2);

**x1=5, y1=15, x2=-2, y2=-6, d=22.1359**

A3 b.

**Original code:**

k = 5;

a0 = 2;

a1 = 0.5(a0+k/a0);

a2 = 0.5 \* (a1 + k / a1);

a3 = 0.5 \* (a1 + k / a2);

a4 = 0.5 \* (a3 + k / a3);

E = abs(a4 - sqrt(a0));

**Corrected code:**

>> k = 5;

a0 = 2;

a1 = 0.5\*(a0+k/a0);

a2 = 0.5 \* (a1 + k / a1);

a3 = 0.5 \* (a2 + k / a2);

a4 = 0.5 \* (a3 + k / a3);

E = abs(a4 - sqrt(k));

**a4=2.2361, E=0**

A3 c.

**Original code:**

>> a = 8;

b = 17;

c = 22;

s = (A + b + c) \* 2;

A = sqrt(s(s-a)\*(s-b)\*(s-c));

**Corrected code:**

>> a = 8;

b = 17;

c = 22;

s = (a + b + c) / 2;

A = sqrt(s\*(s-a)\*(s-b)\*(s-c));

**A = 59.5939**

A3 d.

**Original code:**

R = a\*b\*c/4\*A;

pct = a / (pi \* R^2);

pct = pct / 100;

**Corrected code:**

R = (a\*b\*c)/(4\*A);

pct = A / (pi \* R^2);

pct = pct \* 100;

**pct=12.0407**

A3 e.

**Original code:**

>> % Define vectors

x1 = 1;

y1 = 1;

z1 = 1;

x2 = 1;

y2 = -1;

z2 = 2;

% Calculate cross product

c1 = (y1 \* z2 - y2 \* z1;

c2 = z1 \* x2 - z2 \* y1;

c3 = x1 \* y2 - y1 \* x2;

% Calculate area

A = 0.5 \* SQRT (c1^2 + c2^2 + c3^2);

**Corrected code:**

>> % Define vectors

x1 = 1;

y1 = 1;

z1 = 1;

x2 = 1;

y2 = -1;

z2 = 2;

% Calculate cross product

c1 = y1 \* z2 - y2 \* z1;

c2 = z1 \* x2 - z2 \* x1;

c3 = x1 \* y2 - y1 \* x2;

% Calculate area

A = 0.5 \* sqrt (c1^2 + c2^2 + c3^2);

**A=1.8708**